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Children Who Read in Kindergarten¹

This study compared differences in family background, pre-school experiences, and selected variables associated with reading among the population of 31 readers attending Calgary Kindergartens and a sample of 31 randomly selected non-early readers. Achievement of the same subjects was compared after one year of reading instruction. Intelligence, visual discrimination, letter name knowledge, word recognition, and rate of learning to read new words were the most significant variables in distinguishing the two groups. After one year of instruction they differed significantly in oral word reading, vocabulary, and comprehension. Early readers came from higher socio-economic levels and smaller families, their mothers had more education, they spent more time in sedentary activities, and they received a variety of kinds of help. Within limitations, the findings suggest that reading programs should be adapted to stimulate early readers and to provide specific pre-reading instruction to the others in those factors which are associated with success in reading. (Dr. King is a Professor of Curriculum and Instruction in the Faculty of Education at The University of Calgary, and Doris Friesen is at the Learning Assistance Centre, Calgary.)

Most children today are better prepared for learning to read than ever before. They are exposed to a great many verbal symbols in their environment. Parents are becoming increasingly aware of the importance of providing pre-school educational experiences that contribute directly and indirectly to the ability to learn to read.

According to the Denver study (1966), "increasing numbers of children are able to do a little reading at the time they enter first grade." Some of them learn to read even earlier. Generally, these children have had no formal instruction, but presumably were ready to learn to read.

Little research has been reported on children who learned to read early. Reports of exceptional children, biographies, autobiographies, and case studies provide useful but incomplete descriptions of certain char-

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acteristics. The most important research on early readers was two related longitudinal studies undertaken by Durkin (1966).

In the first study, initiated in a California school system in 1958, less than one percent of children beginning grade one were identified as readers. Three years later a similar study, conducted in selected New York schools, identified 3.5 percent of the pupils as early readers. Those children who started reading earlier were significantly superior in reading achievement after six years of school instruction when compared with classmates of the same mental age who did not begin to read until grade one. While early readers as a group had a high median IQ (121 in California and 133 in New York), the range of IQ scores was from 91 to 161 in the first study and 82 to 170 in the second study. A number of traits and characteristics of the children were studied by means of home interviews, teacher rating scales, and tests. Differences were found in family backgrounds, particularly in the attitudes of parents and the influence of older siblings.

Since children begin reading in English at varying ages and some are entering school elsewhere with reading competency, it was assumed that a sample of early readers could be located in the area, even though some characteristics of the population would differ from those of related studies. Hypothesizing that the identification of unique characteristics of these children would be advantageous for the development of pre-reading programs, a study was planned on kindergarten readers.

Specifically, can we differentiate kindergarten readers from non-readers on the following variables: sex, age, intelligence, vocabulary, listening comprehension, following directions, auditory discrimination, auditory blending, visual discrimination, visual-motor coordination, knowledge of letter names, word recognition, and rate of learning to read new words? In addition, are there any differences in the family backgrounds and learning experiences of kindergarten children who had achieved some measure of success in learning to read and those who had not? After a year of school instruction, it is possible to differentiate the early readers from the non-early readers on vocabulary, comprehension, and word recognition? What kinds of adjustments are made in the instructional program for children who have some reading ability?

Design of The Study

Subjects

The subjects were selected from the population of 4,282 children attending Community and Public School Kindergartens in Calgary, Canada. The children attended kindergarten from 2 to 2½ hours a day, either in the morning or afternoon. In total, there were 144 classes taught by 109 teachers as 35 teachers taught both a morning and afternoon session. Enrollments varied from 14 to 37.

The kindergarten teachers listed on a questionnaire 104 children as possible readers. These subjects were given a standardized oral reading test. Only two were not tested because one child moved and parental consent was not given for a very emotionally disturbed child. Of the 102 subjects tested, 31 were identified as readers, according to the criteria established

for this study, and thus constituted a population of the readers in the Calgary Community and Public School Kindergartens. An equivalent number of subjects who could not read was selected randomly from the same kindergarten classes. In the group of early readers there were 11 boys and 20 girls. In the group of non-early readers there were 21 boys and 10 girls.

After one year of instruction in school, only 27 of the early readers and 28 of the non-early readers remained in the Calgary Public and Separate Schools. There were 11 boys and 16 girls in the group of early readers and 19 boys and 9 girls in the group of non-early readers (Table 6).

Materials and Procedures

The study was designed in four main parts: identifying readers, obtaining information from parents, assessing the abilities of the subjects, and evaluating the reading progress of the subjects after one year of school instruction.

Identifying Readers. All kindergarten teachers received a letter two months before the end of term explaining the purpose of the study and enlisting their support in completing a questionnaire. After a reminder call, the total of 109 forms were returned. The purpose of the questionnaire was to identify possible readers in attendance at kindergartens. Because of the difficulty in defining a "reader" at this level, gross categories were provided on the questionnaire so that teachers could list names under the most appropriate description: (1) reads name and other isolated words in the classroom, (2) reads words that have not been directly taught in the class, (3) reads simple stories, and (4) reads a whole book at the grade one level or higher. The first category did not discriminate readers from non-readers as almost all subjects could read at this level in the spring. The Word Recognition and Word Analysis subtest of the *Durrell Analysis of Reading Difficulty* was then administered to all pupils listed in the last three categories to determine a reading grade level.

Subjects were considered to be readers if they met the two criteria established for this study: assessment by a teacher of the ability to read words, stories, or a book not taught in class, and assessment by a standardized test of the ability to read at a grade one level or higher.

Obtaining Information from Parents. The parents of the population of kindergarten readers and the parents of the sample of kindergarten non-readers were sent a questionnaire. Many items common to both questionnaires requested information on the parents, other adults, siblings, languages spoken, child's activities, child's previous group learning experiences, handedness, and relevant pre-reading activities. Some additional questions were included in the form to the parents of readers which solicited information on the beginning age, interest in reading, and the kind of help provided to the child. Parents were encouraged to discuss any items with the investigators.

Assessing Pupils' Abilities. Three kinds of standardized tests were used in assessing the abilities of the subjects: a group intelligence test, a group reading readiness test, and an individual learning rate test.

The mental abilities test administered was the *Lorge-Thorndike Intelligence Test*, Level 1, Kindergarten and Grade One. This test provides

an IQ score and one of the subtests provides a vocabulary score which was considered an important variable in this study. The *Gates-MacGinitie Readiness Skills Test* for Kindergarten and Grade I consisted of eight subtests: listening comprehension, auditory discrimination, visual discrimination, following directions, letter recognition, visual-motor coordination, auditory blending, and word recognition. The other readiness test used was the Learning Rate subtest of the *Murphy-Durrell Reading Readiness Analysis*.

The early readers and non-early readers in each kindergarten were tested together for the group tests in a room apart from the regular classroom. Groups were determined initially by the number of readers in any particular kindergarten and then doubled when the randomly selected non-readers were added. The size of the groups being tested varied from two to six. In administering the tests, one half of the subjects were given the *Lorge-Thorndike Intelligence Test* one day and the *Gates-MacGinitie Reading Readiness Test* on the second day. The order of administration was reversed for the other half of the subjects so that the experience of writing tests would affect the scores on both tests equally. Finally, the Learning Rate subtest of the *Murphy-Durrell Reading Readiness Analysis* was administered to all subjects on an individual basis.

Evaluating Progress After One Year. Additional information was obtained on the subjects who were still resident in Calgary after one year of attendance in school by means of a teacher's questionnaire and a standardized reading achievement test.

The questionnaire sent to grade one teachers contained five sections relating to the pre-reading program: reading program, reading skills, reading interests and habits, and traits and attitudes of the pupils. Since the range of reading achievement scores could be expected to be large for the subjects, a decision had to be made in selecting a test that would be appropriate for grade one children and yet provide for those who were capable of scoring much beyond that level. Three forms of the *Gates-MacGinitie Reading Test* were used; Primary A which provides reading grade scores ranging from 1.3 to 3.5, Primary B from 1.2 to 5.2, and Primary C from 1.3 to 7.1. All kindergarten non-readers and kindergarten readers who had scored below grade 2.5 on the Word Recognition and Word Analysis Test of the *Durrell Analysis of Reading Difficulty* were given Primary A. Readers who had scored between 2.6 and 3.5 were given Primary B, and those who scored above 3.5 were given Primary C.

Results

Information obtained from the questionnaires to parents related to family background and child's preschool experiences. The data on another problem, the differentiation of early readers from non-early readers on selected variables, were gathered from test results and analyzed statistically. The main statistic used was a multiple discriminant analysis. A classification matrix was derived and an intercorrelation matrix on selected variables was obtained for kindergarten readers and non-

readers. Chi-square was also used in some of the tests of significance. The outcome was considered significant if the probability level was $<.05$.

The statistical analyses were repeated on the subjects remaining in the study after one year of instruction in school and with reading achievement scores added as variables. Information obtained from the questionnaire to teachers in the follow-up study was summarized.

Family Background

Information on the birthplace, education, socio-economic status, and number of children, obtained from the parents of the subjects, is summarized in Table 1.

TABLE 1
FAMILY BACKGROUND OF KINDERGARTEN READERS
AND KINDERGARTEN NON-READERS

Family Background	Kindergarten Readers n = 31		Kindergarten Non-Readers n = 31	
Parents' Birthplace	Father	Mother	Father	Mother
Canada	23	26	23	21
U.S.A.	2	2	0	0
Other Countries	6	3	8	10
Parents' Educational Attainment	Father	Mother	Father	Mother
University degree	13	7	7	6
Grade 12 & other training	5	4	9	7
Grade 10-12	9	19	10	14
Grade 7-9	4	1	5	4
Socio-Economic Level (Blishen Socio-Economic Index)				
70 and up		10		5
60 - 69		6		9
50 - 59		7		9
40 - 49		4		5
30 - 39		4		3
Below 30		0		0
Number of Children (including subject)				
1		2		1
2		14		8
3		12		15
4		2		4
5 - 11		1		3
$\bar{X}$		2.6		3.2

The difference between the observed and expected educational attainment of parents of the two groups was tested using Chi-square. There was no significant difference in the father's educational attainment ($\chi^2 = 4.68$) but the differences between the educational attainment of the mothers ($\chi^2 = 7.84$) was significant at the .05 level.

The occupation of the father was used to determine the socio-economic index for the families of the subjects. The scale used was "A Socio-Economic Index for Occupations in Canada" (Blishen, 1967). This index was developed by using the income and education as reported in the 1961 Census of Canada and prestige scale scores from the Pineo-Porter scale for 320 occupations in Canada (1967).

Chronological ages were not significantly different between the groups; 71.22 months for early readers and 71.00 months for non-early readers. Eleven of the readers were the oldest child in the family and 18 had older brothers and sisters. Nine of the kindergarten non-readers were the oldest in the family and 20 had older brothers and sisters.

In all families but one, both mother and father were living in the home. The father was the only parent living at home with one of the early readers but, in this case, information was also obtained from the mother. Only two families had an adult other than the parents living at the home; a grandfather in one case and an uncle in the other.

In the homes of five early readers there was a language other than English spoken and four of the subjects also spoke that language. Six children who had not yet learned to read came from homes where a language other than English was spoken and three of them spoke that language.

Pre-School Experiences

Information obtained from the parents on the pre-school learning experiences of the subjects included: motor skills, verbal skills, nursery school and day-care center attendance, interests, and activities.

No significant differences were reported in the ages (in months) at which the two groups began walking and talking.

	Kindergarten Readers		Kindergarten Non-readers	
	mean	range	mean	range
Began walking	11.8	9-15	11.7	7.5-15
Began talking	15	8-24	15.8	8-30

Among the early readers, six (19.3 per cent) were predominantly left-handed while only one (3.2 per cent) in the other group was left-handed.

Four readers and six non-readers had attended nursery school for one or two years and one non-reader had also been to day-care center for a year.

Preferred activities, as listed by the subjects, are reported in Table 2.

Television viewing was mentioned as a favorite activity for only four children in each group, but all except one child watched some television each week. According to the parents, the amount of time children spent watching television varied with the season; winter ranking highest. For the early readers, the average time spent viewing television was 9.0 hours per week; for the kindergarten non-readers, it was 10.2 hours.

Almost all the children had access to easy reading material in the home. Some parents mentioned having extensive book collections for children.

TABLE 2
PREFERRED ACTIVITIES OF KINDERGARTEN READERS
AND KINDERGARTEN NON-READERS

Activities	Kindergarten Readers	Kindergarten Non-readers
Outdoor active play	25	30
Handwork (drawing, coloring painting, printing)	32	16
Quiet games (cards, checkers)	11	6
Playing with toys	1	5
Listening to stories	2	15
Looking at books, magazines	3	8
Construction activities (blocks, paper, wood)	6	9
Reading	13	n.a.
Playing School	5	0
Watching television	4	4
Miscellaneous (dramatic play, music, camping)	17	11

Of the readers, 21 were read to regularly, five irregularly, and five not at all. For the other group, 21 were also read to regularly, three often and seven not at all. Greater differences were found in visits to the library; 19 early readers contrasted to 11 non-reading kindergartners visited public libraries.

Kindergarten Readers

The 31 readers, tested on an oral word reading test, ranged in achievement from low grade 1 to high grade 5.

Parents reported a range of ages from 2.5 to 5 years when their children began showing an interest in reading and a range from 3 to 6 years when the children actually began reading. Twenty-six of the subjects had received some help in learning to read at home, four had received very little help, and one had no help. The greater part of the help was received from the mother for 11, from the father for three, from both parents for seven, and from grandparents for two of the subjects.

According to the parents, the assistance provided in the home was mainly specific word knowledge: teaching letter sounds (14 cases), teaching letter names (11 cases), and telling the child a specific word on request (11 cases). Others reported a variety of kinds of assistance, such as printing words for the children (four), using commercial materials (four), answering questions (three), vocabulary training on words while reading to the child (two), observing the child playing school with older children (one), and encouraging the child to print words (one).

Data on Selected Variables

A multiple discriminant analysis was used to determine whether or not the kindergarten readers could be differentiated from the non-readers on selected variables: vocabulary, listening comprehension, following directions, auditory discrimination, visual discrimination, visual-motor coordination, letter recognition, auditory blending, word recognition, and rate of learning new words. In addition to these 10 specific skills, intelligence, sex, and chronological age were other variables analyzed.

The value of the generalized Mahalanobis D^2 statistic was 382.03. Using this value to test the overall significance of the mean values in the two groups for the 13 variables, the critical value of Chi-square is 32.91 at the .001 level. Thus, the observed D^2 value is highly significant and indicates that the early reader group performed differently from the non-early reader group in relation to the 13 variables.

In the classification matrix, all 31 early readers fit into Group I and were correctly classified as such. In Group II, two non-early readers were incorrectly classified and showed characteristics similar to that of the reader group. The other 29 non-early readers were correctly classified as such.

Data on Selected Variables After One Year of Instruction

A multiple discriminant analysis was repeated on the selected variables from the first part of the study for those subjects remaining after one year of school instruction. In addition, three new variables were added for each group: scores on oral word reading, vocabulary, and reading comprehension.

The revised value of the generalized Mahalanobis D^2 statistic was 402.03 on the 13 scores of the subjects remaining in the study. This was still highly significant. With the additional variables added after one year, the generalized Mahalanobis D^2 statistic was 627.82 which is also significant.

The revised classification matrix for subjects from the first part of the study who continued through one year of school instruction indicated that one of the non-reading kindergarten subjects who was classified incorrectly in kindergarten was lost to the study. Of particular importance, however, was the fact that pupils who had learned to read early all fit correctly into the classification as did those who had not learned to read early in kindergarten when compared after one year of school instruction.

Table 3, which presents means, standard deviations, and the intercorrelation matrix for early readers, includes only subjects remaining in the study after one year of reading instruction. The first 13 variables were data obtained at the end of the kindergarten year. In addition, variable 14, an oral word reading test in year 1, was administered to the kindergarten readers only. The remaining three variables were scores obtained after a year of reading instruction. Sixteen correlations were significant at the .05 level.

The means, standard deviations, and intercorrelation matrix for non-early readers are presented in Table 4. Again, the first 13 variables were

TABLE 3
MEANS, STANDARD DEVIATIONS, AND INTERCORRELATION MATRIX FOR EARLY READERS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	—	.121	.014	.105	-.185	.231	.223	.065	-.038	.093	-.228	.267	.381+	.189	.308	.329	.073
2		—	.295	.380	.366	.061	.437+	.404+	.098	.314	.338	.201	.124	-.036	.174	.280	.323
3			—	.491*	.471+	.377	.318	.428+	.214	.223	.015	.230	.103	-.099	.198	.277	.227
4				—	.231	.378	.312	.487+	-.039	.247	.255	.177	.044	-.134	.088	.324	.102
5					—	.323	.390+	.259	.359	.550*	.215	.377	-.008	.015	.082	.199	.260
6						—	.459+	.277	.228	.142	-.142	.339	.209	.097	.164	.308	.079
7							—	.430+	.327	.433+	.219	.748*	.553*	.351	.397+	.452+	.203
8								—	.132	.164	.289	.424+	.229	.046	.464+	.600*	.473+
9									—	.186	.033	.433+	.474+	-.049	.049	.106	-.045
10										—	.169	.556*	.269	.148	.213	.213	.163
11											—	.115	-.084	-.043	.051	.185	.159
12												—	.620*	.422+	.646*	.547*	.294
13													—	.479+	.511*	.560*	.185
14														—	.550*	.591*	.385+
15															—	.811*	.792*
16																—	.625*
17																	—
Mean	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
s.d.	—	71.22	111.11	16.85	14.41	20.30	21.48	12.19	17.67	13.93	12.85	23.26	17.33	30.74	70.78	42.63	42.26
	—	2.85	9.89	1.88	3.05	0.90	2.27	1.12	0.67	3.09	1.11	1.45	1.05	25.09	12.59	8.74	9.45

+ Significant at .05 level

* Significant at .01 level

TABLE 4
MEANS, STANDARD DEVIATIONS, AND INTERCORRELATION MATRIX FOR NON-EARLY READERS

	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
1	—	.122	-.135	.043	.227	-.056	-.367	.006	-.025	-.097	-.364	-.232	-.197	.249	-.222	-.141
2		—	-.546*	-.287	-.143	-.302	-.171	-.534*	-.240	-.127	-.356	-.194	-.059	-.089	-.416+	-.317
3			—	.761*	.433+	.593*	.457+	.698*	.444+	.141	.458+	.436+	.229	-.046	.421+	.445+
4				—	.405+	.545*	.241	.535*	.327	.015	.154	.261	.279	.005	.335	.305
5					—	.474+	.283	.372	.108	.318	.247	.076	.109	-.286	.333	.047
6						—	.461+	.648*	.413+	.329	.558*	.448+	.441+	.246	.654*	.498*
7							—	.329	.405+	.570*	.493*	.530*	.433+	.051	.468+	.460+
8								—	.525*	.065	.623*	.403+	.127	.042	.506*	.464+
9									—	.125	.439+	.626*	.587*	.116	.539*	.625*
10										—	.325	.387+	.121	.019	.367	.161
11											—	.618*	.331	.027	.603*	.507*
12												—	.627*	.261	.303	.369
13													—	.344	.255	.225
15														—	-.094	.005
16															—	.749*
17																—
	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
Mean	—	71.00	100.79	14.96	12.29	19.61	14.50	10.36	10.00	10.89	9.79	8.04	8.00	12.32	38.21	21.71
s.d.	—	3.14	12.95	2.97	3.18	2.11	5.31	2.66	6.11	3.13	2.72	4.52	3.50	7.33	8.63	7.89

+ Significant at .05 level
* Significant at .01 level

data obtained at the end of the kindergarten year for those subjects who remained in the study for another year. The three additional variables were measured after a year of reading instruction. Twenty-six correlations were significant at the .01 level and 22 additional correlations were significant at the .05 level.

First Year of Reading Instruction

Teachers reported using a great variety of beginning reading materials with both groups and some pre-reading materials with the non-early readers. The kinds of adjustments made in the instructional program for those who had achieved some competency in reading were of three main types: advancement to a higher reading achievement group, enrichment activities, and individualized instruction in reading. Only three teachers reported no adjustments in the program for the early reading subjects in this study. On the other hand, teachers of the non-early readers reported that a great variety of corrective instruction was required for these pupils. Only two from this group were assigned to the highest achieving reading group in the classroom after one year of instruction.

Teachers reported no significant differences between the groups in pupils volunteering to read orally but did rate the early readers significantly higher than the non-early readers in both silent and oral reading ability. The major strengths of the early readers were attributed to good comprehension and word recognition skills, according to the teachers. Early readers chose reading as a preferred activity more frequently than their classmates. As expected, reports indicated they read more books independently, although accurate records were not kept. The mean number of books read independently during the first year of school was estimated to be 41 for early readers and 30 for non-early readers.

In response to the questionnaire items on abilities and traits, the teachers presented somewhat different profiles of pupils who were early readers and those who were not, as shown in Table 5.

Discussion

Slightly less than one per cent of the Community and Public School Kindergarten pupils in Calgary were identified as readers. Almost all of these early readers had some informal help in learning to read from members of their families, but had not received reading instruction in the kindergarten program.

The factors in the family background which appeared to be most important were the mother's educational attainment and the father's occupation. Mothers of early readers achieved a significantly higher level of education than the mothers of non-early readers. The socioeconomic index was higher and the average family size was smaller for kindergarten readers when compared to non-early readers.

As a group, the early readers were more intelligent, with an average IQ of 111.11 and a range of scores from 91 to 132. The others had a mean IQ of 100.79 with a range from 62 to 120. Little difference was found between the two groups in the ages at which they began to walk and talk. However, there was a considerably greater number of left-

TABLE 5
ABILITIES AND TRAITS OF SUBJECTS AFTER
ONE YEAR OF READING INSTRUCTION

Abilities and Traits	Early Readers n = 27	Non-early Readers n = 28
Mental ability		
Bright	24	10
Average	3	18
Dull	0	0
Memory		
Good	24	14
Average	3	14
Poor	0	0
Challenging task		
Is persistent	13	8
Makes some attempt	12	13
Gives up easily	2	7
Work habits		
Careful	17	9
Average	8	12
Careless	2	6
Omission		1
Self-reliance		
Independent	15	8
Average	11	12
Dependent	1	8
Attentiveness		
Concentrates well	16	8
Attends adequately	10	12
Easily distracted	1	8
Curiosity		
Very curious	10	6
Average	17	20
Indifferent	0	2
Speaking Vocabulary		
Extensive	16	3
Average	11	22
Limited	0	3
Expression of ideas		
Good	19	9
Average	7	15
Poor	1	4

handed early readers than non-early readers. Sedentary activities, such as handwork and quiet games, were favored by the kindergarten readers, although they tended to watch less television than the others.

On the variables analyzed by a multiple discriminant analysis, the readers and non-readers in the kindergarten formed two distinct groups.

Intelligence, visual discrimination, letter recognition, word recognition, and rate of learning to read new words were the variables most important in differentiating between the two groups. In the intercorrelation matrix for early readers, the reading level attained by the subjects at the end of the kindergarten year (variable 14), correlated significantly with word recognition and rate of learning to read new words, the two factors that were found to be the best indicators of early reading achievement. The selected skills for non-early readers appear more intercorrelated and less differentiated than for early readers. Also, the reading skills appear as a unitary-type ability for non-early readers and for the readers the particular skills are more distinct and differentiated.

After one year of reading instruction, this small group of early readers possessed certain characteristics that still made them distinguishable from their classmates. The second oral word reading test, used to determine reading level, correlated significantly with visual discrimination, following directions, auditory blending, learning rate, and the word reading test administered the previous year. All three tests administered at the end of a year of school instruction, oral word reading, vocabulary, and comprehension, were significantly correlated for the early readers, whereas only vocabulary and comprehension were highly correlated for the non-early readers. It is also interesting to note that vocabulary and comprehension correlated significantly with the ability to follow directions the previous year for both of the kindergarten groups.

Of particular importance was the growth which early readers made on the oral word reading test, one of the criterion measures used in identifying them in the kindergarten. When the test was repeated after one year of reading instruction the mean of the scores increased from 30.74 to 70.78. For those children who had not learned to read early the mean of the scores on the same test was 12.32 with a range of 2 to 34 compared to the mean of 70.78 and a range of 44 to 88 for the early readers. Not only did the kindergarten readers have initial success but certain factors interacting with the instructional program yielded a

TABLE 6
SEX DISTRIBUTION

	Year 1			Year 2		
	Boys	Girls	Total	Boys	Girls	Total
Early Readers	11	20	31	11	16	27
Non-Early Readers	21	10	31	19	9	28
Total	32	30		30	25	

highly significant gain in reading achievement. The non-early readers after nearly a year of reading instruction, as a group, had not achieved a mean score on the oral word reading test even approaching the mean score of the early readers *before* the latter had received any formal instruction.

The findings of this study must be interpreted with due consideration for certain limitations. An arbitrary definition of a "reader" at this level is not entirely satisfactory. The number of subjects identified as readers was small. Although it was a city population of kindergarten readers, some children who read early may not have attended kindergarten and thus would not have been included in the study. Other than city-wide directives to kindergarten teachers, there was little control in the interaction of factors in the kindergarten program and the factors in the home situation which contributed to early success in reading. Similarly, the possible effects of experiences during the summer recess have not been investigated. The number of variables and the duration of the study were, of necessity, limited.

Within these limitations, some practical implications are suggested from this study and related studies in other countries. As the number of children receiving kindergarten instruction is growing it is increasingly important for kindergarten teachers to identify those pupils who are learning to read early. Information from this study suggested that teachers frequently underestimated the progress of pupils, probably because they were not involved in the formal teaching of a pre-reading program. Teachers receiving early readers at subsequent levels should be alerted so that instruction may be adapted to take advantage of the early start and to provide a well articulated developmental program. Since those who read early usually maintain an advantage, programs should become increasingly flexible to provide the maximum amount of stimulation.

Children reportedly are interested in reading or reading-related activities, such as listening to stories long before school and even kindergarten age. The effects of stimulating certain kinds of pre-reading experiences in the home setting have not been studied as rigorously in Canada as they have been, for example, in Japan.

Although some children read sooner than others there is no reason to assume that reading instruction should be advanced to an earlier age for all children. Some factors associated with early success, such as intelligence, may be stimulated but cannot be taught in a manner comparable to specific reading skills. However, for those skill areas that have already been identified as being significantly related to reading success we can at least work to do an increasingly better job of teaching them. These skills include visual discrimination, letter recognition, word recognition, and listening to and following directions.

The effects of new trends and changing emphases must be constantly appraised. What effects are new television programs having on the acquisition of reading skills? What effects are para-professionals having on reading success factors? What effects are programs that involve adults from the community having on pre-schoolers?

Children Who Read in Kindergarten

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K. MARJORIBANKS

Achievement Orientation of Canadian Ethnic Groups

Research has indicated that the differential rates of occupational mobility that exist among ethnic groups are related to ethnic group inequalities in achievement orientation and intelligence. In the present study an examination is made of the interrelationships among the constructs of ethnicity, social class, achievement orientation, and intelligence. The sample included families, classified as middle class and low class, from five ethnic groups, residing in Ontario. In general it was found that Jewish and white Anglo-Saxon Protestant groups, which are over-represented in the upper levels of the Canadian occupational hierarchy, had above average achievement orientation and intelligence test scores. Franco-Ontarian and Southern Italian groups, which are over-represented in the lower levels of the occupational hierarchy, had a combination of either average or below average achievement orientation and intelligence test scores. Canadian Indians (Iroquois), who are largely concentrated in the lower levels of the Canadian occupational hierarchy, were found to exhibit below average achievement orientation and intelligence test scores. The results tend to support predictions made from a review of old culture studies and recent empirical investigations of the ethnic groups. (Dr. Marjoribanks is a Lecturer in Sociology of Education, the Department of Educational Studies, University of Oxford, England.)

Introduction

The Canadian social structure is characterized by a disproportionate representation of ethnic groups in the various levels of the occupational hierarchy (Porter, 1965). For example, census data indicates that the ethnic groups classified as British and Jewish are over-represented in the upper levels of the hierarchy and under-represented in the lower levels. The French Canadian and Southern Italian groups exhibit a reverse pattern, being under-represented in the upper levels of the hierarchy and over-represented in the lower levels; the Canadian Indian group is largely concentrated in the lower levels of the occupational hierarchy.

Research has indicated that two factors associated with the formation of an occupational hierarchy are intelligence and achievement orientation. Duncan (1968) found, for example, that intelligence test scores accounted for more of the variance in both educational and occupational achievement, of young white American males, than did father's occupation, father's education, or number of siblings. In an examination of longitudinal data in Sweden, Husen (1968) found that intelligence was significantly related to occupational achievement, and from a review of research studies, Lipset and Bendix (1958) also concluded that intelligence was an important factor in accounting for occupational achievement.

They also suggested that occupational achievement is associated with factors which intensify the involvement of a child with his parents and which reflect an orientation towards achievement.

In the present study an investigation was made of the extent to which a number of Canadian ethnic groups, which differ in their position in the occupational hierarchy, also differ in their orientation towards achievement. The interrelationships among the constructs of ethnicity, social class, achievement orientation, and intelligence were also examined.

Theoretical Framework

The theoretical framework adopted for the study, which is presented in Figure 1, is an extension of the theoretical models developed by Sewell and Shah (1967), Duncan (1968), Duncan and Duncan (1968), Rehberg et al. (1970), and Alwin and Mueller (1971).

FIGURE 1

Theoretical Model Linking Ethnicity, Social Class, and Occupational Achievement



Note: Ethnicity and social class are also connected directly with both educational achievement and occupational achievement.

The primary concern of the present study was to investigate the linkage between the constructs of ethnicity and achievement orientation. In the study the five ethnic groups mentioned earlier were examined: Jewish, white Anglo Saxon Protestants, French Canadians (Franco-Ontarions), Southern Italians, and Canadian Indians (Iroquois).

The following review of 'old culture' studies and of recent empirical investigations of the five ethnic groups was made to establish propositions regarding the nature of the relationship between ethnicity and achievement orientation.

Ethnicity and Achievement Orientation

In the United States, Rosen (1959) found that Jewish and white Anglo Saxon Protestant parents exerted a significantly stronger orientation towards achievement in the rearing of their children than did French Canadian or Southern Italian parents. Similarly, Lenski (1961) found that Jews and white Protestants identified themselves with the individualistic-competitive patterns of thought and action which are historically associated with the Protestant ethic. By contrast, Catholic groups were more often associated with the collectivistic-security oriented patterns of thought and action historically opposed to the Protestant ethic and the spirit of capitalism. Herberg (1960), Glazer and Moynihan (1963), and Strodbeck (1958) all suggest that, unlike other immigrant groups in North America, Jewish parents showed, from the date of their arrival, a passion for education unique among ethnic groups.

In another comparison which involved the study of Jewish and Southern Italian groups, Gans (1962) proposes that, because of their high valuation of education the Jews, unlike the Southern Italians, do not restrain their children from pursuing careers that might eventually draw the children away from the family. Gans also suggests that many Italian-American boys fail to respond to education due to a lack of motivation from parents. He suggests that this response is related to the parental ambivalence about the usefulness of education, and also to the absence of books and other intellectual stimuli in the home.

A set of studies by Fortin (1964), Gérin (1964), and Miner (1939) which have examined rural parishes in early Quebec, suggest that the French Canadian family was often indifferent and even hostile towards the development of education. Gérin indicates, for example, that in the rearing of his children, *the habitant* "does not emphasize individual effort as is done in a 'particularistic' society, . . . , he neglects education too much, particularly education of the elementary and practical order which would be indispensable to him in climbing the social ladder".

In the Report of the Royal Commission on Bilingualism and Biculturalism (1968), an examination was made of the intellectual test performance of Franco-Ontario students, students from Anglophone homes, and students from homes where neither English nor French was the main language. It was found that on all tests, the performance of the Francophone students was significantly poorer than the performance of the other two groups. While socioeconomic factors accounted for part of the poorer performance of the Franco-Ontario students, these factors did not provide a full explanation. An examination of the parental plans for education, as perceived by the students, indicated that the Franco-phone parents had slightly lower expectations for their children than did other parents in the study. The Francophone parents also had different plans for post-secondary education. A higher proportion of the parents in

the Francophone group saw some kind of vocational training or a job as the next step after school, rather than a university education.

From his examination of Canadian Indians, Vernon (1966) suggests that their way of life is characterized by a passivistic-collectivistic-present orientation, which is in opposition to the orientations which have been found to be associated with occupational achievement. In an investigation of Indian communities in Southern Ontario, Dilling (1965) suggests that the Indian seeks to perpetuate his culture and traditions and that his accommodation to the dominant culture has implications which are different from those of other minority groups. Dilling proposes that the level of aspiration is an area of conflict between the Indian culture and that of the Anglo Saxon. An important feature of the Canadian Indian family structure, which is likely to affect achievement orientation, is family size. Research suggests that the size of the family group influences the patterning of interactions and relationships among its members such that the level of involvement in educational activities between adults and children is likely to be reduced as family size increases. Census data indicates that of all the ethnic groups in Canada, the Indian group has the largest average family size.

From the studies which were examined, the following hypothesis was proposed for investigation:

The achievement orientation of Jewish and white Anglo-Saxon Protestant families is significantly greater than the achievement orientation of Franco-Ontarian, Canadian Indian (Iroquois), and Southern Italian families.

Method

Achievement Orientation

As indicated earlier, Lipset and Bendix suggest that occupational achievement is associated with factors which intensify the involvement of a child with his parents. In the present study four such factors were isolated: (1) press (Murray, 1938) for activeness, which seeks to establish the extent and content of both indoor and outdoor activities engaged in by the family, (2) press for intellectuality, which refers more specifically to the academic nature of the interaction between parents and children, (3) press for English, which seeks to measure the nature and quality of the linguistic involvement of the child with his parents and other members of the family, and (4) press for achievement, which refers to the extent to which parents value and reward educational activities.

Thus achievement orientation was defined in terms of: (1) press for activeness, (2) press for intellectuality, (3) press for English, (4) press for achievement.

Each of the achievement orientation factors was defined in terms of a set of characteristics which were believed to be the behavioural manifestations of the factors. The results of studies by Dave (1963), Wolf (1964), Plowden (1967), and Weiss (1969), were used to select the characteristics associated with each factor. In these latter four studies, attempts were made to isolate elements of the parent-child interaction process which

would be related to both cognitive and affective characteristics of the child.

The characteristics listed in Table 1 facilitated the development of an instrument for the study which was used to gain a measure of achievement orientation. The instrument, in the form of a home interview schedule,

TABLE 1
THE ACHIEVEMENT ORIENTATION FACTORS AND THEIR RELATED
CHARACTERISTICS

Achievement Orientation Factor	Characteristics
1. Press for Activeness	1a. Extent and content of indoor activities 1b. Extent and content of outdoor activities 1c. Extent and purpose of the use of T.V. and other media
2. Press for Intellectuality	2a. Number of thought-provoking activities engaged in by children 2b. Opportunities made available for thought-provoking discussions and thinking 2c. Use of books, periodicals, and other literature
3. Press for English	3a. Language usage and reinforcement 3b. Opportunities available for language (English) usage
4. Press for Achievement	4a. Parental expectations for the education of their child 4b. Social press 4c. Parent's own aspirations 4d. Preparation and planning for child's education 4e. Knowledge of child's educational progress 4f. Parental interest 4g. Valuing educational accomplishments

was used to elicit responses both from mothers and fathers. Because of the complexity and the subtlety of the achievement orientation factors that were to be measured, it was considered desirable not to limit the interviewers and respondents to a completely fixed alternative item schedule. However, because it was also considered desirable to have as interviewer for each ethnic group a member of that ethnic group, it was decided that a completely open ended item schedule might reduce the reliability of the instrument. Therefore a semi-structured interview schedule was developed.

In the schedule a set of alternative responses for each question was provided for the guidance of the interviewer. In addition, an 'other answer' space was provided for each question so that the interviewer could record a response not covered by those supplied.

A set of items was constructed to obtain a measure of each of the achievement orientation characteristics. In order to score each item, a six point rating scale was developed. The score for each of the orientation factors was obtained by summing the scores on the relevant characteristics.

Intelligence

Intelligence was operationalized by the scores on the SRA Primary Mental Abilities test. As well as providing a set of multifactored scores, the test provides a total ability score.

Sample

Families from five ethnic groups residing in Ontario were examined. The groups were Canadian Indian (Iroquois), French Canadian (Franco-Ontarions), Jewish, Southern Italian, and white Anglo-Saxon Protestant. In each case the family had at least one 11 year old (Canadian born) boy attending school. Except for the Canadian Indians, who were from one reserve, the ethnic groups resided in urban centres. The Jewish parents sent their 11 year old sons to Hebrew schools, and the French Canadian and Southern Italian parents sent their sons to Roman Catholic schools. In the schools attended by the French Canadian boys a strong French studies curriculum was offered as well as a regular English studies program.

Approximately 100 families from each ethnic group were selected for the study. Where possible, two parallel pools of 40 families were formed within each ethnic group. Within the pools the families were assigned to two categories, one classified as middle class, the other as lower class. The intention of the categorization was to obtain 20 middle class families and 20 lower class families in each pool. The purpose of the substitute pools was to provide a set of alternate families which could be used in the study if families from the first pool did not agree to participate. An equally weighted combination of the occupation of the head of the household and a rating of his (or her) education was used as the basis of the social class classification.

From the standpoint of the statistical analysis, the use of a factorial design makes it possible to isolate the effect of the variable under such consideration, while controlling for the effect of 'unwanted' variables. Such a design has been used in ethnic group studies by Strodbeck (1958), Deutsch *et al.* (1967), Lesser *et al.* (1964), and by Stodolsky and Lesser (1967).

In the case of the Southern Italians and the Canadian Indians it was not possible to form completely parallel middle class pools; in the case of the Jewish families it was not possible to duplicate the lower class group. The final sample within each ethnic group included 37 families, 18 classified as middle class and 19 as lower class. Because 'perfect' matching was not achieved across ethnic groups, the effects of social class were also investigated in the analysis of the data.

Results

Before the relationship between ethnicity and achievement orientation was examined, the reliabilities of the achievement orientation scales were

estimated by calculating coefficient alpha. Since the study was concerned with the differences in mean scores between groups the reliability coefficients, which are presented in Table 2, were considered to be of an acceptable level.

TABLE 2
RELIABILITY COEFFICIENTS OF THE ACHIEVEMENT ORIENTATION SCALES

Scale	Reliability Coefficient	Standard Deviation
P/Activeness	.80	11.29
P/Intellectuality	.88	17.05
P/English	.93	17.83
P/Achievement	.94	35.18

With respect to the relationship between ethnicity and achievement orientation it was hypothesized that the Jewish and white Anglo-Saxon Protestant groups would exert a significantly stronger achievement orientation than the other three ethnic groups.

In Table 3, the mean scores of the achievement orientation factors for each ethnic group have been presented. The scores on each of the factors were converted to standard scores, calculated over the total sample of families, with a mean of 50 and a standard deviation of 10.

TABLE 3
MEAN SCORES OF THE ACHIEVEMENT ORIENTATION FACTORS OF EACH ETHNIC GROUP

Ethnic Group	Achievement orientation factors			
	P/Activeness	P/Intellectuality	P/English	P/Achievement
Jewish	54.8	56.6	55.0	58.2
White Protestant	54.4	53.9	58.9	52.4
Franco-Ontarion	51.4	50.9	44.3	49.8
Southern Italian	44.8	47.5	42.5	48.9
Canadian Indian	44.5	41.0	49.2	40.6

When differences between the ethnic groups in the levels of each of the factors were examined, it was found that in:

1. Press for activeness: Jewish, Protestant, and Franco-Ontarion families exerted a similar press for activeness, but they exerted a significantly stronger press than the Southern Italian and Canadian Indian families.
2. Press for intellectuality: Jewish families had significantly higher press for intellectuality scores than did the Franco-Ontarion, Southern Italian,

- and Canadian Indian families. The Jewish families did not differ significantly from the Protestant families, and the Protestant and Franco-Ontarian families did not differ significantly from each other.
3. Press for English: The Protestant families had a significantly stronger press for English than the Jewish families. These two groups exerted a significantly stronger press than the other three groups. The press for English scores of the Canadian Indians was significantly higher than the scores for the Franco-Ontarians and Southern Italians. These latter two groups did not differ significantly.
4. Press for achievement: Jewish families had a significantly stronger press for achievement than the Protestant families. The Protestant group did not differ significantly from the Southern Italian and the Franco-Ontarian groups. All groups exerted a significantly stronger press than the Indian group.

Overall, the results indicated that the Jewish and Protestant groups provided a stronger achievement orientation than did the Southern Italian and Canadian Indian groups. These results supported the acceptance of the hypothesis. The Franco-Ontarian group scores were, in general, significantly lower than the scores of the Jewish group. However, on three of the scales the differences between the Franco-Ontarians and the white Protestants were not significant. Therefore the hypothesis was not fully

TABLE 4
RELATIONSHIP BETWEEN ETHNICITY, SOCIAL CLASS, AND
ACHIEVEMENT ORIENTATION

Criterion	Predictor Variables	Corrected Multiple Correlation R_c	Amount of Total Variance R_c^2
P/Activeness	Ethnicity	.43***	18.49***
	A = Ethnicity + Social Class	.61***	37.21***
	B = Social class	.48***	23.04***
	A - B = Ethnicity		14.17***
P/Intellectuality	Ethnicity	.50***	25.00***
	A = Ethnicity + Social class	.69***	47.61***
	B = Social class	.53***	28.09***
	A - B = Ethnicity		19.52***
P/English	Ethnicity	.62***	38.44***
	A = Ethnicity + Social class	.68***	46.24***
	B = Social class	.36***	12.96***
	A - B = Ethnicity		33.28***
P/Achievement	Ethnicity	.56***	31.36***
	A = Ethnicity + Social class	.73***	53.29***
	B = Social class	.52***	27.04***
	A - B = Ethnicity		26.25***

*** $p < .001$.
^aCorrected to allow for cumulative errors in R, and for small sample size.

supported. But the results did indicate that, in general, ethnicity was related to achievement orientation in the manner that had been predicted.

The relationship between ethnicity and achievement orientation was examined further by determining the amount of variance in the academic orientation scores which could be attributed to the independent influence of ethnicity, after accounting for the effects of social class and the covariation of social class and ethnicity. The results of the analysis, which have been presented in Table 4, indicated that, although social class was significantly related to each of the achievement orientation factors, the independent contribution of ethnicity to the variation in the orientation scores was also significant.

The results indicated that ethnicity and social class accounted for a large amount of the variance in the achievement orientation scores, which provided support for the theoretical framework.

Ethnicity and Intelligence

The second concern of the study was to examine the interrelationships among the constructs of ethnicity, social class, achievement orientation, and intelligence. An analysis of the mean intelligence test scores, presented in Table 5, indicate: (1) that the mean score of the middle class boys was significantly higher than the mean score of the lower class boys, and (2) that the mean score of the Jewish boys was significantly higher than the mean scores of the other groups. The Protestant group differed significantly from the Franco-Ontarions and Canadian Indians, but not from the Southern Italians. The Southern Italian boys did not differ significantly from the Franco-Ontarions, but they had a significantly higher mean score than the Canadian Indians. The Franco-Ontarions and the Canadian Indians did not differ significantly from each other.

TABLE 5
ETHNICITY, SOCIAL CLASS, AND INTELLIGENCE TEST SCORES

Group	Mean Intelligence Score
Middle class	106.7
Lower class	98.1
Jewish	114.6
White Protestant	105.7
Southern Italian	101.2
Franco-Ontarion	96.3
Canadian Indian	93.4

A multiple regression model was used to examine the interrelationships between ethnicity, social class, achievement orientation, and intelligence. In the model, the ethnic group membership data formed a set of mutually exclusive categories, the social class and achievement orientation data formed a set of continuous predictor variables, and the intelligence scores formed the criterion vector. The results of the analysis which have

been presented in Table 6, indicated that ethnicity accounted for a small but significant percentage of the variance in the intelligence test scores over and above the contribution of social class and achievement orientation scores. Again, the results provided support for the theoretical framework.

TABLE 6
ETHNICITY, SOCIAL CLASS, ACHIEVEMENT ORIENTATION, AND
INTELLIGENCE

Criterion	Predictor Variables	Corrected Multiple Correlation R_c	Amount of Total Variance R_c^2
Intelligence	Ethnicity	.60***	36.00***
	Social class	.45***	20.25***
	A = Ethnicity + Social class + achievement orientation	.76***	57.76***
	B = Social class + achievement orientation	.71***	50.41***
	C = Ethnicity		7.35**

**p < .01
***p < .001

Conclusions

The results of the study indicate that the Jewish and the white Anglo Saxon Protestant groups, which are over-represented in the upper levels of the Canadian occupational hierarchy, are characterized by a combination of above average achievement orientation and intelligence test scores. Below average achievement orientation and intelligence test scores characterized the Canadian Indian group which is largely concentrated in the lower levels of the occupational hierarchy.

In general, the Southern Italian and Franco-Ontario groups, which are over-represented in the lower levels of the occupational hierarchy, exhibited a combination of either average or below average achievement orientation and intelligence test scores. The different intelligence test performance between these two groups may be related to the nature of the home linguistic environment. In the study it was found that the low press for English which was exerted by the Franco-Ontarions was associated with an extremely high press for French. Alternatively, in the Southern Italian homes there was little desire by parents to retain Italian as the language of interaction between themselves and their children. Ausubel (1958) and Olson and MacArthur (1962) have suggested that a bilingual home environment may be a retarding factor in intelligence test performance.

Miller (1971) has recently stated the need for more studies which examine factors that produce occupational mobility rather than those which examine the consequences of mobility. By examining the interac-

tions among the constructs of ethnicity, social class, achievement orientation, and intelligence, the present study is, hopefully, a move in that direction.

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W. MATHESON

An Independent Validation of Bales' Concept of "Social Psychological Space"

7,202 responses to Bales' Interpersonal Ratings Questionnaire were analyzed in an attempt to validate the concepts of three-dimensional space as descriptive of individual performance in small groups. In general, the responses of student-teachers rating themselves and others on the basis of overt interaction in small learning groups support Bales' concepts of social psychological directions and group space. (Dr. Wayne Matheson is a Post Doctoral Fellow in the Department of Educational Psychology, The University of Alberta.)

R. F. Bales (1950, 1970) describes the dynamics of the small group in terms of Euclidean or three-dimensional space. The group is represented by co-ordinates on three axes: "power", "affection", and "task". These axes are orthogonal. The power axis is considered to be a continuum with one pole in the upward area (considerable power), the other pole downward (submissive and powerless). In similar fashion, the affective and task axes are visualized as continua with poles of positive (promoting good feelings), negative (promoting bad feelings), and forward (pro-task) and backward (anti-task), respectively. The average character of the group process over some period may then be represented as a point location within this three-dimensional space; changes in character of the group may be represented by changes in the location of the point.

This system can also be used to portray the location of any particular individual in the group, or changes in his position over time. Individual performance is represented as a group member's position or "movement" within this defined three-dimensional group space. In this regard, Bales (1970) has delineated a number of personality "types", each of which takes up a particular location on each of these three group space dimensions. He recognized twenty-seven specific areas in the three-dimensional space, each with its characteristic value orientation, personality peculiar-

ities and mode of interaction in the group. Thus a particular "type" of behaviour pattern corresponds to each of these twenty-seven locations.

The individual or group position, and "movement", in this psychological "space" is usually established by interaction process analysis (IPA). Bales' 12 category system is used to "fix" the position of the group at any particular phase of its activity. The most exciting contribution within Bales' recent development of IPA (1970) is to establish a *link* between the analysis of the on-going activity of individuals in groups and these individuals' corresponding questionnaire responses—e.g. Cattell's 16 PF test, M.M.P.I., Thurstone, etc., etc. In addition, he provides a short twenty-six item "Interpersonal Ratings Questionnaire" to help identify the "type" of individual in the group. (The central position in space, a kind of "neutral point" does not have a corresponding item on the questionnaire.) The questionnaire has alternative forms A, B, C. The most frequently used version is Form A, which is shown here with the appropriate key.*

Bales' contention is that his *Interpersonal Ratings Questionnaire* may be used to define the three distinct dimensions of group performance, and that each item on the questionnaire encompasses one of the twenty-six co-ordinates in such a three dimensional space with sufficient accuracy to be useful for prognostic purposes. It would be expected, therefore, that analysis of the questionnaire would turn up three main factors: upward, positive, forward. The analysis should also show that each item on the questionnaire is "loaded" heavily on one, two or all three of these factors depending upon its co-ordinate location on one, two, or all three of the group space dimensions.

Each member of four small training groups (N=48) was asked to rate self, trainer, and each other member in their group, using Form A (see Appendix 1). The questionnaire was administered in this way on six different occasions in the life of each group, after the second, fourth, seventh, tenth, thirteenth, and fifteenth meetings. The total numbers of acceptable responses on these occasions were 1186, 1194, 1219, 1200, 1207, 1196. There was an overall total response of 7202. I.B.M. answer sheets were used so that the questionnaires could be machine scored.

After each administration, a factor analysis was carried out. In addition the grand total of 7,202 responses was analyzed, using the same program. The unrotated factors for this total response are presented as Table 1. It is typical of all the analyses, results of all seven factor analyses being very similar, indicating *four* factors consistently across all seven analyses.

The first factor on every occasion can be identified with the up-down (power) dimension. Almost every questionnaire item which is keyed as upward by Bales has a high positive loading on this first factor, whilst all but three of the nine items keyed downward have a negative loading on this factor. It appears that the items measure more satisfactorily at the upper end of the dimension than at the downward end. The second factor corresponds to the positive-negative (affective) dimension of group space

* This study is part of a larger research project concerned with the validity and reliability of various systems used in analyzing group process and outcomes. The study is supported by a grant from Canada Council. Dr. McLeish, who directs this project, and the author of this article, are especially grateful to Dr. R. F. Bales for use of a number of his unpublished manuscripts, for assistance in various training problems, and for his valuable comments on the first draft of this paper.

(signs being reversed). The questionnaire items are again in almost complete agreement with Bales' predictions. He comments:

The third factor, as it turns out seems to measure location on the downward end more satisfactorily than on the upward end. Factors one and three are orthogonal in the study, although they both seem to have to do with the power dimension. Examination of the items indicates that the highest items on factor one seem to deal with the interaction and involvement of the individual in the group in terms of verbal interaction, whereas the highest items on factor three seem to deal with values, or beliefs, that might be expected to motivate a self-conception consistent with low participation. Factor one seems to deal with interactive behaviour, factor three with values and beliefs about low status. This difference in the items was not intended by me, but is an accident of the assignment of different items to the different forms A, B, and C. Items of variegated kinds, some on participation or verbal interaction, some on values, some on liking or other feelings aroused, some on non-verbal behaviour, are used in the various forms, and apparently varied unsystematically. Nevertheless, the split of the conceptualized factor, Upward-Downward, into two orthogonal components, as found in responses to Form A, is of considerable interest to future work with the factors and the space.*

The fourth factor corresponds to the forward-backward (task) dimension of group space (signs being reversed). Again the questionnaire items are in very substantial agreement.

A further examination of the first factor indicates that it contains high loadings for items which are not keyed in the expected directions of U or D (items 10, 11, 17, for example). These three items are all expected to have a high positive component (loading on factor two), and do, with the exception of item 11. Items 18 and 19, also expected to measure in the positive direction, have a strong loading on factor one. It may be said then, that the items which were expected to load primarily in the positive direction, also had strong loadings in the upward direction. This suggests that, in these groups, being dominant and being positive tend to go together. The second factor would then be correlated with the first, tending towards an axis that might be defined as a "good leadership" factor.

The eigenvalues show that the greater part of the variance of the questionnaire is accounted for by the first factor. Form A, whilst discriminating across the items, and demonstrating that the three dimensions of group space are manifest, gives precedence to dominant (upward) behaviour as the most influential force determining the direction of responses to an individual in the group.

The overall analysis shows remarkable conformity with Bales' expectations. Many items are *exactly as predicted*. Others are only slightly discrepant. There are very few items indeed the loadings of which are not of the expected magnitude: there are even fewer items the loadings of which are opposite to the expected direction. It might be best to illustrate the discrepant items.

Item 12 has been keyed as F. In this population it does measure in that direction, and is one of the two highest items, but it also has a considerable downward component.

* Bales, personal correspondence, April, 1972.

Item 13 is keyed NF, and it is the best item for measuring the Forward component, but it has an unexpected positive component.

Items 18, 19 are keyed DP, DPF, but always have U loadings. In addition, item 19 does not receive any loading on F, as expected.

Item 20 is keyed DF, but never receives F loadings.

Item 21 is keyed DNF, but initially has a U loading.

Item 23, keyed DNB, hardly shows either an N or a B component in this population.

Item 25, keyed DPB, does not show any positive component, and if anything, has a forward instead of a backward direction.

Before attempting any explanation concerning the failure of these eight items in certain aspects, it should be kept in mind that there were eighteen items which met factorial expectations. As regards, these eight items a considered judgment would be that they did not "fully succeed". It also seems meaningful to re-emphasize the consistency of factor pattern across all seven major factor analyses.

The eight items which did not fully succeed were examined to account for their inability to meet expectations. Five cases where reasonable explanations could be given are presented below. Items 19, 21 and 25 were found difficult to explain, and are left to the reader's judgment.

Item 12—*Conservatism* is readily associated with passivity, or a laissez-faire attitude. It is more likely to be tainted with submissiveness (D), rather than neutrality in terms of any encounter with power (U).

Item 13—*Objectively* is a term which seems easily related to honesty. Honesty has a positive (P) rather than negative connotation.

Item 18—The phrase "*To make others feel*" smacks of manipulation and control. In this way the item may have acquired an association with power (U) more easily than with expected submissiveness (D).

Item 20—*Introverted* is a submissive, non-resistive state which seems to account for the downward loading, while *introspective* reflects a more anti-authoritarian individual who might not easily be "seduced" into attempting the group trainer's task. In this way the F component may have become less prominent.

Item 23—*Failure and withdrawal* do not seem to be terms which we would associate easily with drawing negative feelings from others (N), or deviancy (B) and so seems confined to downward (D) associations.

TABLE 1
UNROTATED FACTOR MATRIX OF INTERPERSONAL RATINGS
QUESTIONNAIRE USING TOTAL RESPONSES N = 7202

Item No.	Bales keys as	Factor 1	Factor 2	Factor 3	Factor 4
1	U	0.882	0.202	0.017	0.030
2	UP	0.883	-0.145	-0.035	0.048
3	UPF	0.784	-0.224	-0.044	-0.205
4	UF	0.849	0.198	-0.002	-0.210
5	UNF	0.402	0.733	-0.027	-0.387
6	UN	0.514	0.766	-0.019	-0.177
7	UNB	0.332	0.648	0.195	0.353
8	UB	0.401	0.630	0.157	0.412
9	UPB	0.590	-0.569	0.143	0.288
10	P	0.709	-0.367	0.279	0.029
11	PF	0.781	0.020	0.185	-0.222
12	F	-0.312	-0.114	0.433	-0.449
13	NF	0.147	-0.228	0.091	-0.669
14	N	0.279	0.243	0.150	-0.090
15	NB	0.428	0.436	0.262	0.145
16	B	0.284	0.465	0.428	0.045
17	PB	0.613	-0.576	0.147	0.239
18	DP	0.422	-0.466	0.484	0.200
19	DPF	0.476	-0.559	0.355	-0.089
20	DF	-0.808	-0.189	0.303	-0.025
21	DNF	0.258	-0.112	0.564	-0.062
22	DN	-0.240	0.652	0.303	0.020
23	DNB	-0.587	0.070	0.498	0.120
24	DB	-0.689	0.150	0.367	-0.067
25	DPB	-0.137	0.028	0.802	-0.171
26	D	-0.442	0.019	0.614	0.140
EIGENVALUE =		8.103	4.444	2.954	1.556

APPENDIX 1

INTERPERSONAL RATINGS QUESTIONNAIRE FORM A

	If	Key
1. Does he (or she) seem to <i>receive a lot of interaction</i> from others?	Yes	U
2. Does he seem <i>personally involved in the group</i> ?	Yes	UP
3. Does he seem <i>valuable for a logical task</i> ?	Yes	UPF
4. Does he <i>assume responsibility for task leadership</i> ?	Yes	UF
5. Does he <i>speak like an autocratic authority</i> ?	Yes	UNF
6. Does he seem <i>dominating</i> ?	Yes	UN
7. Does he seem to demand <i>pleasure and gratification</i> ?	Yes	UNB
8. Does he seem to <i>think of himself as entertaining</i> ?	Yes	UB
9. Does he seem <i>warm and personal</i> ?	Yes	UPB
10. Does he <i>arouse your admiration</i> ?	Yes	P
11. Does he seem especially to be <i>addressed when others have serious opinions</i> about which they want confirmation?	Yes	PF
12. Does he seem to stand for the most <i>conservative ideas and beliefs of the group</i> ?	Yes	F
13. Does he always seem to try to <i>speak objectively</i> ?	Yes	NF
14. Does he seem to feel that his <i>individual independence</i> is very important?	Yes	N
15. Does he seem to <i>feel that others are generally too conforming to conventional social expectations</i> ?	Yes	NB
16. Does he seem to <i>reject religious belief generally</i> ?	Yes	B
17. Do you feel <i>liking</i> for him or her?	Yes	PB
18. Does he seem to <i>make others feel he admires them</i> ?	Yes	Dp
19. Does he seem to believe that <i>equality and humanitarian concern</i> for others is important?	Yes	DPF
20. Does he seem very <i>introverted, serious shy, introspective</i> ?	Yes	DF
21. Does he seem to believe that it is necessary to <i>sacrifice the self</i> for higher values?	Yes	DNF
22. Does he seem <i>resentful</i> ?	Yes	DN
23. Does he seem to accept <i>failure and withdrawal</i> for himself?	Yes	DNB
24. Does he seem to <i>withhold cooperation</i> passively?	Yes	DB
25. Does he seem to <i>identify with some group of underprivileged persons</i> ?	Yes	DPB
26. Does he tend to <i>devalue</i> himself?	Yes	D

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Language Background, Guessing, Mastery and Type of Error in Beginning Reading¹

This paper presents the results from a study of reading skill development of 81 first, and 45 second grade children. Hypothetical links in the causal sequence relating socioeconomic status to reading achievement were tested using guessing ratios as an operational measure of reflection-impulsivity, the key cognitive mediating variable. Significant relationships were shown to exist between socioeconomic status and cognitive style, cognitive style and reading achievement and cognitive style and type of reading error made. However, statistical tests of the relationship between socioeconomic status and reading achievement failed to reach significance. Failure to confirm this hypothesized relationship is explained in terms of inadequacy of the measurements and non-representativeness of the student sample. Implications of the findings are briefly noted. (Dr. Stennett, Chief of Educational Research Services, and Dr. Smythe, Research Associate, are members of the London Board of Education; Dr. Hardy is an Associate Professor at Althouse College of Education, London, Ontario.)

Although the relationship between socioeconomic status and the development of skill in reading has been repeatedly documented, the processes which mediate this relationship have only recently begun to become apparent. Shipman and Hess (1966, p.17) summarize current thinking as follows:

“... the structure of the family shape[s] communication and language and ... language shapes thought and cognitive styles of problem solving. ... A problem-solving approach requires reflection and the ability to weigh decisions, to choose among alternatives. The effect of restricted speech

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and of status orientation [lower socioeconomic groups] is to foreclose the need for reflective weighing of alternatives and consequences: the use of an elaborated code with its orientation to persons and consequences [upper socioeconomic groups] tends to produce a cognitive style more easily adapted to problem-solving and reflection."

A key mediator of the relationship between socioeconomic status or language background and the development of skill in reading appears, therefore, to be variations in cognitive style along a dimension of reflection-impulsivity. Kagan (1965, p.609) has documented "... the intra-individual stability and inter-task generality ..." of such a dimension which he defines as

"... the tendency to reflect over alternative-solution possibilities, in contrast to the tendency to make an impulsive selection of a solution, in problems with high response uncertainty."

Miller and Mumbauer's (1967) report of a positive relationship between Kagan's measure of reflection-impulsivity and socioeconomic status provides empirical support for the relevance of this particular dimension of cognitive style as a significant mediator of the socioeconomic status—reading skill relationship.

Detailed analyses of the oral reading behavior of first grade children by Biemiller (1970) and Weber (1970) have shown significant increases in the number of graphically-constrained errors during the first grade. This type of error tends to displace the earlier, contextually-constrained one in which the child's response bears little relationship to the graphic structure of the stimulus word. Thus it appears that, during the grade one year, children improve their oral reading performance by increasing the degree of attention they give to the stimulus word and moderating their tendency to guess, i.e., they become more reflective. It follows, therefore, both that reflective children should make fewer word recognition errors and also that a greater proportion of their errors should be of the graphically-constrained type. Although Kagan (1965) reported that reflective children do make fewer word recognition errors, his method of presenting the types of errors his subjects made does not allow conclusions with respect to the proportion of their errors that were graphically constrained.

Goodman's (1970) perceptive description of reading as a 'psycholinguistic guessing game' reflects the major, and perhaps very different, influence of cognitive style in both learning to read and in skilled reading. While it is apparent that a more reflective style, which involves careful attention to the graphic structure of words, may facilitate learning to read, a more 'impulsive' strategy, involving greater use of guessing from context cues, may be indispensable to efficient, skilled reading. It is also quite possible that the differential growth in reading skill between children from different socioeconomic backgrounds may result from the interaction of cognitive style and instructional method. Methods which emphasize early acquisition of sight vocabulary by the whole-word, look-say approach tend to reinforce the cognitive style of lower socioeconomic status children and may make it more difficult for them to shift to the detailed, reflective examination of words which is apparently (Beimiller, 1970) associated with increased mastery.

The 'causal' sequence relating socioeconomic status to reading achievement, apparent in the results of the research reported above, can be summarized as follows: socioeconomic status differences are associated with different family structures; family structures shape communication and language patterns; language shapes cognitive styles along a dimension of reflection-impulsivity; a reflective cognitive style, characteristic of higher socioeconomic groups, leads beginning readers to pay increasingly detailed attention to the graphic characteristics of words; such attention is characteristic of those grade one children who show the greatest reading achievement. The present paper presents data bearing on the adequacy of the hypothesized links in this causal sequence.

Method

Subjects

The Ss for this study were 81 grade one and 45 grade two students enrolled in an inner-city school in London, Ontario. The mean chronological age in months, as of September, 1970, was 76.5 for the grade one and 90.8 for the grade two students. There was a larger percentage of boys in both grade one (53) and grade two (58). The socioeconomic status distribution of the sample was markedly skewed toward the 'low' end, less than five per cent of students coming from families headed by persons employed as professionals or managers. Only four students had attended nursery school and none had had day care. About 42 per cent of the grade one and 32 per cent of the grade two students had attended at least one other elementary school than the one in which they were enrolled. Fourteen per cent of the grade one and 18 per cent of the grade two students had repeated the prior grade.

Measurements

All children in this study were given a large battery of tests designed to measure the various elemental subskills considered necessary for success in beginning reading (Stennett et al., 1970a). The tests were administered during May and June 1971 by a specially-trained group of examiners under the supervision of two psychologists.

Those tests from the larger battery that are reported in this study are as follows:

1. *Allographs*. This test contained 182 items, each consisting of three letters surrounded by a rectangular frame. The letters could appear in either upper- or lower-case format and in primary, century or cursive script style. For each item the student was asked whether or not the frame contained a particular letter and, if so, to put a mark on the letter named. One-seventh of the frames did not contain the letter named by the examiner. This test is essentially an elaborate measure of letter recognition skill. Separate scores were derived for students' performance on upper- and lower-case letters.

2. *Word recognition and decoding*. This test was composed of 225 letter-strings, a third each of lengths 2, 3 and 4. One fifth of the letter-strings of each length were real words which occur with high frequency in children's readers (Stennett et al., 1970b). The student was shown each

letter-string using a carousel projector and asked whether or not it was a real word. If he did not respond within three seconds he was shown the next item. Rest periods were given after each 75 items.

After the student had responded to all 225 items he was shown each item he had indicated was a real word and was asked to tell the examiner what the word was. His responses were recorded verbatim.

3. *Visual segmentation*. The 60 items in this test consisted of 30, 5-letter strings and 30, 7-letter strings. Each of the 5-letter strings contained two adjacent letters which composed commonly occurring digraphs in the English language. The arrangement of the remaining letters in the string was such that all other possible pairs of letters occur with very low frequency in the language (Underwood & Schulz, 1960). The 'target' digraphs were located with equal frequency in the initial, middle and final positions. The 7-letter strings were composed in a similar fashion using trigraphs.

The student was shown each item by carousel projector and asked to indicate the two (or three) letters 'that are sometimes part of real words'. If the student gave no response within 8-10 seconds, the next item was administered.

4. *Visual template*. Each of the 130 items on this test consisted of a lower-case letter, in primary print, from which certain portions had been removed. Each of the 26 letters was presented five times, with decreasing amounts of the letter removed. Prior experimentation ensured that, for each letter, the five versions represented increasingly difficult recognition problems.

The items, printed on a strip of paper, were presented one at a time through an aperture in a small box. The student was asked to give the name of each letter if he could. If he knew which letter it was but didn't know its name, he was allowed to point it out on a chart. If the student did not respond in 4-5 seconds he was shown the next item. The items, arranged in decreasing order of difficulty, were presented in two blocks of 65 with a different type of test administered between the blocks.

A student's visual template strength score for a letter was obtained by summing his performance on the five items for that letter, each item being weighted according to its difficulty.

5. *Phoneme-grapheme recognition*. For each item on this test the student was shown a set of five letters by carousel projector and then heard a phoneme played by tape recorder. He was asked to 'point to the letter that makes that sound'. If he did not respond within eight seconds he was given the next item.

The student's knowledge of 33 different phoneme-grapheme associations was tested in this manner by giving three trials of 33 items each. The position of the correct response was randomly assigned within items and across trials.

6. *Letter naming*. Students were shown each letter of the alphabet, in lower-case, primary-print form, by carousel projector and asked to give the letter's name as quickly as they could. The latency of a student's response was measured using a voice-activated relay and digital stop clock. One channel of a stereo tape recorder was used both to activate the carousel projector and start the clock; the student's response stopped

the clock. If the student didn't respond within five seconds, the next item was administered. The 26 letters were presented, in the same random order, three times. The student's score for each letter was calculated using a complex formula which took into consideration both the latency and correctness of his responses.

7. *Auditory blending.* This test consisted of two parts. The first part (15 items) involved having the student blend syllables into words; the second part (31 items) required the student to blend phonemes to words. In both parts the number of units to be blended varied from two to four, with approximately one-quarter second pause between units. All items were presented to the student by tape recorder.

In all of the above tests appropriate practice items were provided to ensure that the student understood what was required of him. Standardized procedures were followed by all examiners who used specially prepared test manuals.

In addition to the formal tests four other measures were employed in this study:

(1) *Teacher ratings of oral reading achievement.* The teachers of the children involved in this study were taken from their classrooms near the end of the school year for a day during which each was asked to assign a grade equivalent score for each of her students on oral reading achievement. For example, if a grade one teacher felt that a particular student's oral reading skill in June was typical of that usually developed by grade one students by December, she assigned that student a grade equivalent score of 1-4, i.e., first grade, fourth month. The ratings, therefore, represented the teacher's assessment of the child's level of achievement in absolute terms.

(2) *Socioeconomic status.* This measure was derived for each student by simply finding in which category of the census classification system the occupation of the breadwinner in his family fell. The scale values, therefore, could range from one for professional and technical occupations to eleven for labourers.

(3) *Reading error types.* The errors students made in decoding words on the recognition and decoding test were classified, for purposes of this study, into three different types—two of which will be reported. The first type, consisting of those errors in which there was a fairly obvious correspondence between the stimulus word and the student's response, were called graphically-constrained. They included: reversal or misidentification of a single letter; reversal of letter order; 'phonic' decoding of a nonsense word to a nonsense word (e.g., student decodes <bu> as /b^/). The second type of error consisted of those in which there was no apparent relationship between the stimulus word and the student's response (e.g., student decodes <yne> as /r^n/). These errors were called non-graphically constrained. (The third type of error, not considered in this report, involved adding or deleting letters and reversals of letter order coupled with misidentification of a letter.) In order to make appropriate statistical comparisons, the percentages of each type of error were calculated for each student. The data for reading error variables, therefore, express the degree to which a student's errors were of a certain type, rather than the number of errors he made.

(4) *Guessing ratios.* For each of the first five tests listed above five guessing ratios (GR) were calculated for each student using the formula:

GR = 102 - { (Number of correct responses / Number of responses made) x 100 } + 1 }

Thus, a student who made ten responses, all of which were correct, would have a GR = 1. A student who made ten responses but had none correct would have a GR = 101. Since time limits for responding were required in all tests and since longer latency of response is characteristic of reflective children (Kagan, 1965), it was assumed that reflective children would make fewer responses and have, therefore, lower guessing ratios. Given the circumstances of testing, guessing ratios were considered to be measures of reflection-impulsivity.

Data Analysis

The data for all 126 Ss were punched onto cards and all statistical analyses done by computer. Intercorrelation matrices were calculated for the five guessing ratios and the ten reading subtest or achievement measures. Students were grouped, in turn, by: (i) their success in decoding words, (ii) their guessing ratio calculated from the word recognition test, and (iii) their socioeconomic status. One-way analyses of variance were performed for several dependent measures for each of these three classification variables.

Results

Table 1 presents the intercorrelations of the guessing ratios derived from five sub-skill tests as well as the correlation of each guessing ratio with the percentage of non-graphically-constrained decoding errors. A factor analysis of the guessing ratio intercorrelations produced one factor with loadings ranging from .59 to .80. These data tend to support Kagan's (1965) contention that reflection-impulsivity can be regarded as a dimension which shows 'intra-individual stability and inter-task gen-

TABLE 1
INTERCORRELATIONS OF GUESSING RATIOS DERIVED FROM FIVE
READING SUB-SKILL TESTS AND CORRELATIONS BETWEEN GUESSING
RATIOS AND PERCENT OF NON-GRAPHICALLY-CONSTRAINED
DECODING ERRORS

Test for which guessing ratios were derived	2	3	4	5	6
1. Allographs	52	30	33	74	58
2. Word recognition		52	47	53	66
3. Visual segmentation			52	33	46
4. Visual template				44	46
5. Phoneme-grapheme recognition					62
6. Percent of non-graphically-constrained decoding errors					

erality'. It is also apparent that guessing ratios derived from a variety of types of reading skill tests can predict the kinds of decoding errors students will tend to make. The positive correlations between guessing ratios and non-graphically-constrained errors indicate that reflective children make proportionally fewer such errors.

The intercorrelation of teachers' ratings of oral reading achievement and students' scores on the various reading sub-skill tests are presented in Table 2. The fact that all of the sub-tests correlate moderately with both teacher ratings of achievement and with one another suggests that the tests do measure both relevant and different types of skill involved in learning to read. Since the number of words correctly decoded correlated quite well (.78) with teacher ratings of achievement, this test was selected as an operational measure of reading mastery.

TABLE 2
INTERCORRELATIONS OF READING SUB-SKILL TEST SCORES
AND TEACHERS' RATINGS OF ORAL READING ACHIEVEMENT

Reading test or rating	2	3	4	5	6	7	8	9	10
1. Teacher ratings	51	47	78	60	51	65	63	61	62
2. Allographs—lower-case		91	63	33	36	81	86	53	49
3. Allographs—upper-case			55	29	28	71	81	42	40
4. Decoding words				58	51	75	80	65	60
5. Visual segmentation					42	40	42	42	42
6. Visual template						40	44	43	29
7. Phoneme-grapheme recognition							83	64	62
8. Letter naming								64	52
9. Auditory blending-syllables									67
10. Auditory blending-phonemes									

With $df = 125$ an r of .174 is required for $p < .05$; .228 for $p < .01$.

Mean guessing ratios, derived from four reading sub-skill tests, for students grouped by the number of words they decoded correctly are presented in Table 3. All four of the one-way analyses of variance yielded F ratios significant well beyond the .001 level of confidence. These data indicate that the development of mastery in reading at the primary level is clearly associated with the use of a reflective cognitive style.

The mean percents of graphically- and non-graphically-constrained errors for students grouped by guessing ratios derived from the word recognition test are presented in Table 4. The data of this table show that reflective children (low guessing ratios) tend to make a relatively higher percentage of graphically-constrained decoding errors and a correspondingly small percentage of non-graphically constrained errors.

TABLE 3
MEAN GUESSING RATIOS FROM FOUR SUB-SKILL TESTS FOR STUDENTS
GROUPED BY NUMBER OF WORDS CORRECTLY DECODED
ON THE WORD RECOGNITION TEST

Test used to derive guessing ratio	Number of words correctly decoded				F ratio*
	0-13	14-26	27-39	40-45	
Visual segmentation	69.25	62.31	48.42	29.73	20.33
Visual template	71.86	69.23	60.03	53.63	14.74
Word recognition	73.86	51.69	35.10	25.94	53.63
Phoneme-grapheme	37.39	12.77	7.19	4.27	42.15
Number of cases	28	13	36	49	

* For df = 3,120 an F ratio of 5.79 is required for significance at $p < .001$.

TABLE 4
MEAN PER CENT OF GRAPHICALLY-CONSTRAINED AND NON-
GRAPHICALLY-CONSTRAINED ERRORS FOR STUDENTS GROUPED
BY GUESSING RATIOS DERIVED FROM THE WORD RECOGNITION
TEST

Type of Error	Guessing ratio groups				F ratio*
	1-25	26-50	51-75	76-101	
Graphically-constrained	73.44	72.14	49.68	43.0	9.23
Non-graphically-constrained	6.42	11.06	31.74	54.5	38.85
Number of cases	14	31	36	45	

*For df = 3,120 an F ratio of 5.79 is required for significance at $p < .001$.

Mean guessing ratios, derived from the word recognition test, and mean number of words correctly decoded are presented in Table 5 for students grouped by socioeconomic status.

These data suggest that children from lower socioeconomic groups are less reflective and develop less mastery in reading than do children from higher socioeconomic groups. The fact that these relationships do not reach more substantial levels of statistical significance may be related to the crudeness of the measure of socioeconomic status used and to the fact that the distribution of the sample in terms of this variable was

TABLE 5
MEAN GUESSING RATIOS DERIVED FROM THE WORD RECOGNITION
TEST AND MEAN NUMBER OF WORDS CORRECTLY DECODED FOR
STUDENTS GROUPED BY SOCIOECONOMIC STATUS

Variable	Socioeconomic status groups			F ratio*	P
	High	Middle	Low		
Guessing ratio	39.96	36.04	49.60	4.01	<.05
Number of words decoded	30.0	33.33	26.04	2.92	N.S.
Number of cases	25	54	47		

* For $df = 2, 125$ an F of 3.07 is required for $p < .05$.

highly skewed. Whereas a representative sample would have contained approximately 24 per cent of students from professional and managerial family backgrounds, our sample contained less than 5 per cent.

Discussion

The results of this study reinforce Kagan's postulation of reflection-impulsivity as a dimension of cognitive style which influences performance on a wide variety of reading-like tasks. Guessing ratios appear to be satisfactory measures of this dimension. While some of the variability in guessing ratios is obviously task-specific, a precise allocation of variance is difficult because, as Kagan (1965, p.626) has noted, the effects of a reflective strategy are maximal at intermediate degrees of mastery.

Several of the hypothesized links in the postulated causal sequence relating socioeconomic status to reading achievement were supported by our findings. Cognitive style is significantly related both to the degree of reading skill developed by beginning readers and the kinds of errors they make. Cognitive style is also related to socioeconomic status and the trend of the findings suggests a significant relationship between socioeconomic status and reading achievement. Studies currently in process, which involve more precise measures of socioeconomic status and a more representative sample of students, will yield further evidence on these points.

Educational Implications

This general line of research has several important implications for reading instruction. First, it calls into question those methods of beginning reading instruction which encourage guessing or, alternatively, which do not encourage detailed examination of words as a word attack strategy. Second, it raises the possibility, imaginatively illustrated in Meichenbaum's work (1971a & b), of enhancing lower socioeconomic status children's skill development in reading by teaching them to adopt a reflective

cognitive style. Finally, it suggests the need for studies directed at discovering the effects of the interaction between instructional methods and cognitive style.

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and

J. H. BRAUER

Using Mental Practice to Improve Reading Performance

In the experiment reported here, reading rate and vocabulary performance increased as a result of mental and physical practice of three selected reading drills. The increase, as measured by the Nelson Denny Reading Test after four one-half-hour drill sessions, was significant at $\alpha.05$ for Vocabulary and $\alpha.01$ for Reading Rate. This leads us to conclude that mental practice can be used effectively to improve reading performance. (Dr. Koziey is an Associate Professor in the Department of Educational Psychology at The University of Alberta, and J. H. Brauer is a Counsellor with the Edmonton Public School System, Edmonton, Alberta.)

In 1943 Vandell, Davis and Clugston found no significant differences in accuracy of basketball shooting and dart throwing by a group which had actual physical practice in these skills and a group which had mental practice only, although both groups scored significantly better than the no-practice group. Subsequently, interest in mental practice has concerned its possible facilitating effect in the initial acquisition of a perceptual-motor skill, in its retention, or in improving the performance of a skill.

A number of studies since 1943 have demonstrated that the actual performance of certain tasks can be improved through mental practice (D. M. Beattie, in Arnold, 1946; Twining, 1949; Clark, 1960; Start, 1960), such as retention of maze habits (Sackett, 1935) and digit substitution and card sorting (Perry, 1939). The present study investigates the effects of mental practice in learning basic rapid reading skills. Since reading is a complex visual-motor task with physical, physiological, and emotional components, it was predicted that mental practice of certain reading skills would improve the over-all reading performance.

Method

There were five groups.

Mental practice refers to the symbolic rehearsal of a physical activity in the absence of any gross muscular movement (Richardson, 1966, p. 148). *S* sits or stands, with eyes closed, and, in imagination, rehearses the

specified skills. *Physical practice* refers to actual specific practice of the skills to be acquired. *Mental practice plus physical practice* refers to a sequence of practicing which includes both mental and physical activity. *Hand as pacer* refers to the controlling of eye movement by moving the hand across the page just beneath the lines to be read. *No practice* was simply not practicing the skills in any way, nor thinking about them, during a designated period. It should be noted that the term "mental practice" is the same concept referred to by Sackett (1935) as symbolic rehearsal, by Perry (1939) as imaginary practice, by Morrisett (ap. Richardson, 1966) as implicit practice, by Whiteley (ap. Richardson, 1966) as mental rehearsal, by Egstrom (1964) as conceptualizing practice, and by Corbin (1967) as covert rehearsal.

Subjects

S were 85 grade eight boys and girls attending a junior high school in Edmonton, Canada. Ss were chosen to form five groups by selecting names from a hat. Each group originally consisted of 17 members. The five groups were randomly assigned to the tasks defined above. Nine subjects did not complete the post-test, their data were omitted from the analysis. This left 76 Ss distributed among the five groups as follows: mental practice (14), physical practice (15), both mental and physical practice (14), hand as pacer (16), and no practice (17).

Instruments

The Nelson-Denny Reading Test, Revised Edition (NDRT), measured reading ability in terms of vocabulary, comprehension, and reading rate. Two comparable forms of the test were used: Form A for the pre-test and Form B for the post-test. The reliability coefficient as reported by David B. Orr (Buros, 1965) for reading rate and vocabulary was .92, for comprehension it was .81. For vocabulary, the validity test item mean was 47.5 on Form A and 47.7 on Form B. For comprehension items the validity mean for Form A was 44.6 and for Form B was 45.3. The norms were based on scores of more than 21,000 school students from Grades 9 to 16. Although Ss in this study were Grade eight students, the study was not conducted until early spring when Ss were well into the second half of the school year.

Procedure

The groups participated in six sessions, each 45 minutes long, twice weekly for a three week period. Form A of the NDRT was administered to all groups in the first session as a pre-test in order to afford a second check on random sampling, and Form B of the NDRT was given to all groups in the final session as the post-test to determine group differences. The same instructor worked with all groups.

The no-practice group was given the pre- and post-test on the first and last days respectively of the period. In the intervening period the members of this group participated in their regular school work while the others were involved in the experimental sessions; they received no instruction or practice in speed reading skills.

The hand as pacer group was set up to check the use of the hand.

These Ss were also tested in the first and last sessions. During the experimental periods they were given only the instruction to read for five minutes each session, using the hand as a guide by moving it along the page under the line being read. The five minute period was approximately the amount of practice time the other groups spent each session using the hand as a pacer while reading.

Certain common procedures were applied to the other three groups. Each group on day two was given a demonstration of the use of the hand as a pacer. The importance of hand-eye coordination was explained with the help of prepared transparencies. Three basic drills were used to teach speed reading, the hand was used as a pacer in all three drills.

The first drill consisted of reading for one minute and counting the number of lines read. The students were then instructed to try to cover the same material in progressively less time: $\frac{3}{4}$ minute, $\frac{1}{2}$ minute, and $\frac{1}{4}$ minute, as outlined in Figure 1. The mental practice group was allowed to read for the first minute: they were then asked to close their eyes and to imagine successfully covering the same material in the three shorter time periods, using the hand-eye coordination technique. The actual

Trial 1—Read 1 min.

Trial 2—Practice $\frac{3}{4}$ min.

Trial 3—Practice $\frac{1}{2}$ min.

Trial 4—Practice $\frac{1}{4}$ min.

Figure 1
Less time — same material drill

practice group practiced each drill by covering the same material in less time while actually reading the material and physically using the hand-eye method. The group with both instructions first practiced physically for one minute, mentally for $\frac{3}{4}$ minute, physically for $\frac{1}{2}$ minute, and then mentally for $\frac{1}{4}$ minute. The next time this drill was introduced the part previously practiced physically was practiced mentally, and that which was practiced mentally was repeated physically.

Drill two consisted of reading for one minute using the hand as a pacer, and then repeating the drill three times. Each repetition had new material added, amounting to 100% of that covered in the first trial, as shown in Figure 2. Only one minute was allowed for each trial. As in drill one all Ss practiced according to specific task instructions.

Trial 1—Read (1 min.)

Trial 2—Practice 2 times original amount read.

Trial 3—Practice 3 times original amount read.

Trial 4—Practice 4 times original amount read.

Figure 2
Same time — more material drill

The third drill consisted of reading for one minute and then, during each additional trial, previously read material was dropped at a rate equivalent to 50% of the material covered on the first reading, while new material, equivalent to 100% of the original material, was added. This procedure is outlined in Figure 3. This drill was repeated three times with only one minute allowed for each trial. The mental practice group

- Trial 1—Read (1 min.).
- Trial 2—Practice 1.5 times original amount read.
- Trial 3—Practice 2 times original amount read.
- Trial 4—Practice 2.5 times original amount read.

Figure 3
Same time — drop and add drill

practiced physically during the first trial and in imagination during the three additional trials. The actual practice group practiced the drill physically during each trial. The last group alternated physical and mental practice on the trials, as before.

During each of the four practice sessions intervening between the pre- and post-tests, the three groups managed to practice each drill twice. Between each drill all Ss were asked to read for one minute, using the hand as a pacer, giving them a total of 5 minutes additional reading time each session. For their own records, the students calculated their reading on this fifth one minute trial each session.

Results

As a check that there was initially no significant difference between the groups due to a failure of randomisation, a one-way analysis of variance was carried out on the pre-test raw scores (NDRT, Form A).

A one-way analysis of variance was also carried out on the post-test (NDRT, Form B) scores to determine whether there were significant differences between groups after treatment. The results of this one-way analysis of variance are shown in Table 1. Significant differences are found in the case of Vocabulary and Reading Rate. For Comprehension, however, means do not differ significantly.

TABLE 1
SUMMARY OF THE ANALYSIS OF VARIANCE FOR POST-TEST
SCORES OF VOCABULARY, COMPREHENSION AND READING RATE

Source	Sum of Squares	Mean Square	df	F	p	Remarks
Vocabulary Post-test	902.60	225.65	4	2.82	.03	Sig.
Comprehension Post-test	987.56	246.89	4	2.30	.06	N.S.
Reading Rate Post-test	845,250.00	211,312.50	4	8.49	.01	Sig.

The differences being significant for Vocabulary and Reading Rate, Newman-Keuls comparisons (Winer, 1962) for ordered means were made, the significance level of .05 being taken as criterion. As outlined in Table 2, post-test means for Vocabulary showed significant differences in favor of three experimental groups when compared with the no practice group. These groups were the hand as pacer, physical practice, and the mental plus physical practice groups. Post-test means for Reading Rate showed significant differences in the mental practice, physical practice, and mental practice plus physical practice groups when compared with both the no practice group and the hand as pacer group. No significant differences were found between the means in any other group comparisons for Vocabulary and Reading Rate.

TABLE 2
POST-TEST SCORES FOR VOCABULARY AND READING RATE

	<i>Vocabulary</i>	<i>Reading Rate</i>
No Practice	21.59	278.59
Hand as Pacer	29.94*	393.25
Mental Practice	26.50	503.43* +
Physical Practice	29.80*	530.20* +
Mental Plus Physical Practice	30.43*	556.79* +

Difference from "no practice" group. * Sig. at $p < .05$

Difference from "hand as pacer" group + Sig. at $p < .05$

Discussion

None of the treatments yielded a significant difference in scores on Comprehension when compared to the average score of the no practice control group. In other words, those groups which learned to read faster did so without suffering any loss in comprehension. It should be pointed out, however, that only the kind of comprehension being measured was a knowledge of what was read (facts) rather than ability to integrate the newly acquired information in a meaningful way, or to relate it to what is already known. This outcome is commonly reported.

Reading Rate showed the greatest variability from group to group on post-test scores. The groups can be placed in an ascending order according to their mean rates as follows: no practice, hand as pacer, mental practice, actual practice, both sorts of practice. These results suggest that mental and physical practice can be used effectively to improve reading rate. In addition to out-stripping the other groups in increased reading speed, the combined mental and physical practice group also seemed to enjoy class time more, possibly due to the variety of activities. That this kind of group shows the greatest gain has also been documented by Clark (1960) and Jones (1964).

The three treatments, mental practice, physical practice, and combined practice proved to be about equally effective in producing significant improvements in reading rate when compared with the no practice

group. The hand as pacer group showed an improvement from pre-test to post-test in reading rate, but no difference as compared on post-test with the no practice group.

When measuring changes in Vocabulary, three groups—hand as pacer, physical practice, and mental plus physical practice, showed a significant improvement when compared to the no practice group. The mental practice group did not show significant improvement over the no practice group when tested on Vocabulary. Since most of the drills were practiced with eyes closed and were performed mentally, this finding is probably not surprising.

The use of the hand as a pacer was surprisingly effective and this group's performance exceeded expectations; Ss showed an increase from pre-test to post-test for both Vocabulary and Reading Rate.

This study, designed to measure the effects of mental practice on the learning of rapid reading skills, indicates that Ss benefitted from using this method. The value of mental practice might be due to improved confidence, increased relaxation, additional analysis of the task, improved organization of action, and increased concentration. The present study shows that mental practice can enhance learning of rapid reading skills. But the questions, why and how does mental practice lead to improved reading performance were not answered.

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S. A. PERKINS

A Pilot Study of the Values of Public and Separate School Grade Twelve Students

A Differential Values Test devised by Thomas was administered to 78 Public School Grade Twelve Students and 62 Separate School Grade Twelve Students in Lethbridge, Alberta. Significant differences were found on the aesthetic, intellectual and material values scales but not on the humanitarian, power, and religious scales. However, in comparing the sexes a different pattern emerged in that the differences between the male students were on aesthetic and intellectual values and between the girls were on material and religious values. Possible reasons for these differences in terms of home influences are discussed. (Dr. Perkins is an Associate Professor of Educational Psychology at the University of Lethbridge.)

Catholic parents send their children to separate schools because they are "in general agreement that the objectives of religious education can best be realized in an atmosphere wherein spiritual and supernatural realities hold their proper place in the hierarchy of values" (McLuskey, 1968). The key words here are atmosphere and values. Apart from these factors and formal instruction in religion, the Catholic school and the public school seem to be substantially similar. The entire separate school system is based on the assumption that certain values and norms of behavior can be acquired by the Catholic student through precept, example, and training (Fichter 1958). In reality, observation suggests that in organization, curriculum, activities, standards and educational results, there is little to differentiate the educational objectives of the average separate school from the public school in Alberta, due to the regulating influence of the Provincial Department of Education.

Social scientists, on the other hand, adopt a "sceptical view concerning the efficiency of formal schooling for the teaching of values. The view of formal education as an omnipotent socializing agent shows an exaggerated regard for education." (Greeley and Rossi, 1966). Since the social scientist is sceptical of the ability of schools to develop value orientations, he

will only grudgingly accept proof for the proposition that schools indeed develop values.

It may well be that formal skills are learned in the classroom. The classroom may also contribute to the transition from the family to the larger society. It is not evident, however, that formal education really has much influence on cultural values. Most research suggests that the more intimate settings of household, neighborhood, friendship, and workplace provide more effective modes of socialization than formal instruction (Greeley and Rossi, 1966).

To ask if religion has been effective in the separate Catholic school is tantamount to asking what effect Christianity has had on civilization. Faith in the efficacy of the school is astounding, and Catholics too regularly share in the mystical expectancy that the school can do anything and everything. (McLuskey 1968)

Research by Brother (1964) in England supports the view that "there is no relationship between Catholic secondary education and associational activity in later life." Most of the research literature available indicates that "the changes in value orientations which do occur in the schools are limited and conditioned by the previous experiences of the student in his family milieu" (Greeley and Rossi, 1966) even though "the entire educational system is based on the assumption that certain types of behavior can be acquired in the social system" (Brookover, 1955).

The purpose of this pilot study was to determine whether grade twelve students of full separate Catholic education in Alberta differed substantially in their values from grade twelve students of full public school education.

In particular, the investigator was interested in determining whether the values of separate and public school, grade twelve students who were on the senior matriculation program differed in any way according to the Differential Value Profile.

The following hypotheses concerning the values of separate and public school grade twelve senior matriculation students as measured by the Differential Value Profile (D.V.P.) were explored in this pilot study.

1. Separate and public school students (groups of both sexes) will respond similarly to the D.V.P. scales
2. Separate and public school male students will respond similarly to the D.V.P. scales
3. Separate and public school female students will respond similarly to the D.V.P. scales

Method

Instrument

Thomas (1967) first developed the Differential Value Profile in 1963. The test, which can be administered as a group test, consists of 134 statements designed to sample personal opinions. Responses are given on a four point scale. The value scales for subjects are: aesthetic, A; humanitarian, H; intellectual, I; material, M; power, P; and religious, R. Each value scale is scored by hand by placing one of six stencils over the standardized answer sheet.

The D.V.P. manual demonstrates good evidence of content validity with a high degree of inter-judge agreement, all coefficients being well above the .01 level of significance. As the test constructor is cautious to point out, all validity studies at the time of publication applied to groups and not individuals. Estimates of the D.V.P. reliability using the K-R formula shows the six total scale coefficients ranging from .86 to .99.

Sample

Participants in this pilot study were seventy-eight public school and sixty-two separate school, grade twelve senior matriculation students in Lethbridge, Alberta. They were tested in their respective schools during May, 1970.

Results

Hypothesis I

Table 1, which compares the values of public and separate school students (combined groups of both sexes), shows that three value scales, Aesthetic, Intellectual and Material show significant differences between the two groups ($p < .01$). In the case of Aesthetic value, the results indicate that the separate school (Catholic) students place more emphasis on Aesthetic values than do public school students. On the other hand, public school students show significantly greater scores on Intellectual and Material values as measured by the D.V.P. ($p < .01$). Hypothesis I is rejected as the public and separate school students did not respond similarly on the D.V.P. scales.

TABLE 1
A COMPARISON OF GRADE TWELVE STUDENTS
ON THE DIFFERENTIAL VALUES TEST

	Public N=78		Separate N=62		t Test
	Mean	S.D.	Mean	S.D.	
Aesthetic	18.74	4.74	21.00	5.19	-2.662**
Humanitarian	21.92	5.94	23.18	6.02	-1.225 N.S.
Intellectual	22.36	4.71	20.13	4.94	2.702**
Material	16.00	6.05	12.58	6.63	3.160**
Power	13.31	5.03	14.02	5.60	-0.781 N.S.
Religion	14.18	9.74	16.84	7.99	-1.723 N.S.

** $p < .01$
N.S. Not Significant

Hypothesis II

A comparison of public and separate school male students in Table 2 reveals that these two groups differ in score on the Aesthetic value scale, ($p < .05$). This indicates that the separate school male students are more inclined towards Aesthetic values than are public school male students. Public school male students demonstrate significantly higher Intel-

lectual scores ($p < .01$) than separate school male students. As public and separate school male students did not respond similarly on the D.V.P. scales, hypothesis II is rejected.

TABLE 2
A COMPARISON OF GRADE TWELVE MALE STUDENTS
ON THE DIFFERENTIAL VALUES TEST

	Public N=40		Separate N=25		t Test
	Mean	S.D.	Mean	S.D.	
Aesthetic	17.55	5.08	20.36	5.93	-2.001*
Humanitarian	19.87	6.30	19.08	6.03	0.495 N.S.
Intellectual	24.75	3.77	20.88	6.08	3.117**
Material	16.02	6.23	13.96	7.11	1.211 N.S.
Power	14.75	5.49	15.76	7.13	-0.632 N.S.
Religion	13.45	9.96	13.36	8.69	0.037 N.S.

* $p < .05$

** $p < .01$

N.S. Not Significant

Hypothesis III

The results shown in Table 3 indicate that scores on two of the value scales are significantly different. Public school female students show significantly higher Material values scores ($p < .01$) than do separate school female students. As far as Religious values are concerned however, the separate school female students score significantly higher than do the public school female students ($p < .05$). Hypothesis III is therefore rejected.

TABLE 3
A COMPARISON OF GRADE TWELVE FEMALE STUDENTS
ON THE DIFFERENTIAL VALUES TEST

	Public N=38		Separate N=37		t Test
	Mean	S.D.	Mean	S.D.	
Aesthetic	20.00	3.99	21.43	4.58	-1.427 N.S.
Humanitarian	24.08	4.64	25.95	4.13	-1.813 N.S.
Intellectual	19.84	4.27	19.62	3.91	0.230 N.S.
Material	15.97	5.85	11.65	6.11	3.089**
Power	11.79	3.95	12.84	3.85	-1.148 N.S.
Religion	14.95	9.44	19.19	6.51	-2.229*

* $p < .05$

** $p < .01$

N.S. Not Significant

Discussion

What are the implications of this pilot study?

The results reveal that as far as the combined sex groups are concerned (Table 1) there are no differences on Religious values as between separate and public school students. However, the separate school students show substantially more involvement with Aesthetic values than do public school students, while the public school students score higher on Intellectual and Material values than do separate school students. The reader is reminded that we are talking about values NOT abilities in these areas.

The fact that the groups do not appear to differ on the values labelled Humanitarian, Power, or Religion seems to support the view of Johnstone (1966):

the strong current of opinion and interpretation flowing throughout our society would make it extremely difficult for the parochial school to get across effectively a divergent view even if it desired and attempted to do so.

In comparing public and separate school male students, two value differences were revealed. Separate school male students scored higher on Aesthetic value while public school male students scored higher on Intellectual value on the D.V.P. At the same time, no value differences were noted for the two groups on Humanitarian, Material, Power or Religious values. It is interesting to note that in a recent pilot study Perkins (1972) discovered no differences on the six scales of the D.V.P. between Canadian and English male secondary school students. Yet, this pilot study reveals differences on Aesthetic and Intellectual values of male students living in the same culture and city.

Of the three kinds of groups compared on the D.V.P. the two female groups alone show any difference in Religious values. Separate school females score significantly higher in Religious value than do public school females. As Greeley and Rossi (1966) suggest:

adolescents from less religious families are superficially influenced by Catholic high schools but this influence quickly wanes. Those from religious families are also influenced but because of the reinforcement received in the family milieu, this influence persists.

The fact that females tend to be more conforming than males, and the fact that perhaps the Catholic females in this sample had their religious values reinforced in the family milieu more than public school females might account for the differences in Religious values between the two groups. In this regard Mary Perkins Ryan (1963) has noted that "Jewish groups have successfully formed their children religiously and culturally outside of school hours." Nutting (1959) also argues that "the home and neighborhood, not the schools, are the sources of the fundamental moral, religious, and civic attitudes." However, these generalizations leave unexpected the absence of differences between separate and public school male students.

This question can be approached from another angle. Recently the ability of the school to influence values has been challenged by Coleman. He suggests that information-poor societies of the past had a powerful

effect on a child's values. But an information-rich modern society removes the power of the school to shape values through selectivity.

Information richness removes the function of the school in extending the child's horizon through vicarious experience; and information pluralism removes from school the function of shaping the child's values through selectivity (Coleman, 1972).

The results of this pilot study are limited because of the size and selective nature of the sample. The findings cannot be taken as definite proof that a causal relationship exists between the variables investigated. It would be interesting to discover whether replication with a larger sample would reveal similar value differences.

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J. McLEISH

The Origin of Psychology as a Science: Ivan Mikhailovich Sechenov

*In the philosophical controversies of the 'forties, 'fifties and 'sixties in Russia, and in the social and political developments which paralleled these discussions, a basis was laid for the birth of an independent science which would deal with human behaviour. In his remarkable treatise *Reflexes of the Brain* (1863) Sechenov developed a detailed program which, properly evaluated, laid the foundation for an objective science of psychology not only in Russia but on a world scale. The true history of these developments, as well as the nature of Sechenov's (and later) Pavlov's contributions has been obscured since the source materials have not been available and American behaviorism grossly misunderstood and misrepresented the actual work of these thinkers. Sechenov's program, being about four decades in advance of world scientific thought (and because, for some reason, no translation of his basic writings was available until 1935 in a West-European language) remained dormant until Pavlov invented the techniques necessary for investigating cerebral processes. (Dr. McLeish is a Professor in the Department of Educational Psychology, The University of Alberta.)*

In the indictment prepared by the St. Petersburg Censors' Committee against Sechenov in 1866, he was charged with putting forward views in his book on *Cerebral Reflexes* described as follows:

This materialistic theory reduces even the best of men to the level of a machine devoid of self-consciousness and free will, and acting automatically; it sweeps away good and evil, moral duty, the merit of good works and responsibility for bad works; it undermines the moral foundations of society and by doing so destroys the religious doctrine of life hereafter; it is opposed both to Christianity and to the Penal Code, and consequently, leads to the corruption of morals.

This book, published originally in 1863 as two journal articles, is in reality a scientific treatise which seeks to establish that our so-called voluntary movements are in fact reflex actions in which there is a dis-

crepancy between the stimulation and the response evoked. More than any other work, it can be said of it at this present time, that it heralds the establishment of an objective science of psychology. It was welcomed by Russian scientists and violently attacked by Russian philosophers. It led quite directly to the establishment of "reflexology" claimed to be the objective science of behaviour by Bekhterev; more importantly, it provided Pavlov with his scientific programme of forty years' work on higher nervous activity ("behaviour"); indirectly it fathered American Behaviourism and the whole movement in world psychology away from philosophical analysis and subjectivity in the direction of experimental science and objective methods.

Sechenov worked in the laboratories of Helmholtz, Du Bois Reymond, Ludwig, Bunsen and Magnus in Germany, with Brücke in Vienna and with Claude Bernard later in France. He was almost certainly familiar with the famous pact entered into by Helmholtz, Brücke, Du Bois Reymond and Ludwig, that they would establish and compel the acceptance of this truth: that "no other forces than common physical and chemical ones are active within the organism". Sechenov extended this principle in a novel way to include the "so-called psychical activity" (the phrase is Pavlov's). He did this, not in the sense of reducing psychic events to laws of physics and chemistry but rather by demonstrating that the three concepts of: (1) the organism-in-its-environment, (2) the tri-member reflex, (3) the process of inhibition and/or intensification of response, provided a model perfectly adequate to explain all animal and human behaviour.

In 1863, he was far in advance of West European thought: the social and political blight of Tsarism had the effect of polarising opinion so that views which were presented within a climate of compromise, hesitancy and temporising in the rest of Europe were taken up by Russian thinkers and developed to their extremist, logical conclusion.

It was Wöhler's synthesis of urea from inorganic materials in 1832 which overthrew the theory that some special "force" distinguished living chemical processes from non-living. The principle of the unity of all chemical processes, both "organic" and inorganic, was joined in 1847 by Helmholtz's declaration of the law of conservation of energy. Darwin's theory of evolution by natural selection in 1859 gave the death-blow to all teleological explanations in natural science. Sechenov was then thirty years of age. This was the scientific *milieu* in which his formative years were spent. His social and political views were formed in the period when Herzen and Chernishevsky were calling for radical changes in Russian society and a new foundation for philosophic thought purged of the subjectivity and spiritualism of Hegel and Schelling.

Even in his doctoral thesis on *Data for the Future Physiology of Alcoholic Intoxication* (1860) Sechenov put forward a consistent materialist viewpoint. In this work, in addition to his experimental studies of alcohol and other chemicals in the blood, he stated the various principles which guided him later in his writings on psychic processes. These were: the unity of the organism and the conditions of its existence; the unity of the forces of organic and inorganic nature; the need to unravel the mysteries of consciousness by objective methods.

For materialism, the recognition of the primacy and existence of the objective world, external to man and independent of his perceptions, wishes and very existence, is absolutely basic. This is the great dividing line which distinguishes materialism from all other philosophical viewpoints. Under the influence of Beneke's *Psychological Sketches*, and his *Theory of Education*, texts which he studied out of interest whilst a student at Moscow University, Sechenov became an extreme idealist—"the whole picture of psychological life came out of the primary forces of the soul". But under the influence of his German teachers he was led to adopt materialism as his basic premise.

Recognising the objectivity of the external world, Sechenov advanced the idea that *all* our psychic activity is the result of environmental stimulation. In other words, the initial cause of every human action lies outside of man. Not only that, but in his psychic and motor activity man is subject to the same laws as appertain to the material world. Contrary to idealism, there is only one set of causal laws: these govern not only man's bodily functions but they apply to his psychic life as well. This does not mean that chemical and physical laws are adequate to explain psychic processes, but rather that in explaining psychic processes we cannot assume that their uniqueness absolves them from operating under the restraints of scientific law. The most general scientific law is causality; next are the laws of conservation of mass and of energy. In the natural sciences we have the law of development from lower to higher forms of life. In the special sciences of physics, chemistry, biology and physiology there are particular laws which refer to specified situations. We must assume that all these discovered relationships apply in the study of man, *unless there is specific scientific evidence to the contrary*. The scientific study of human behaviour means, and can only mean, the establishment of causal relations in this area. It is only on this basis that a science of psychology is possible:

It may be that psychology will shed some of its brilliant and universal theories; huge gaps may appear in its actual knowledge; instead of explanations we will get in most cases the laconic phrase: "We do not know"; the essence of the psychical phenomena, insofar as they are manifested in consciousness (like the essence of all other natural phenomena) will still be concealed from us. And yet psychology will have made a tremendous advance. It will no longer be based on erroneous reasoning prompted by the misleading voice of consciousness; it will rely on positive facts, on verifiable propositions. Its generalizations and deductions, strictly confined to real analogies, will no longer depend on the taste and whims of the investigator, which in the past brought psychology to transcendental absurdities; they will acquire the character of truly objective scientific hypotheses. The subjective, the arbitrary and the fantastic will give way to more or less reliable knowledge. In short, psychology will become a positive science.

The principle that the organism is inseparable from the environment was developed by Sechenov in various forms, since it is basic to an understanding of behaviour. In the first place, given the fact of this dependence and inter-relationship, it is nonsense to talk about man as a "free spirit"—there can be nothing autonomous about the psychic life, it is *organically* interconnected with bodily processes; these in turn are inseparably linked

to the environment. Man's psychic life can be divided into two aspects, the mind and the feelings: this distinction is made by "common psychology" (that is, by introspection). Sechenov is prepared to accept this as a working model. Sensation, perception, memory, thought appertain to the mental sphere; to the emotional belong fear, pleasure, love, enthusiasm, ecstasy. These phenomena of the psychic life are all engendered by the functioning of the brain within the somatic system; the initial impulse which starts off a train of psychic acts comes invariably from the environment.

The entire psychic life of man is associated with the nervous system: this is stimulated, perceives, and reacts to, changes in the external reality which surrounds the organism. Psychic life is inconceivable without external stimulation of the sense organs. There is also, of course, a process by which the nervous system responds to changes in man's internal environment—that is, the organs, muscles, tendons, etc. which constitute the body. The law which governs all these phenomena, and nervous processes in general, is, of course, the law of causality—there is nothing random, chance, uncaused in man's psychic life. Acts take place in the mind always as an effect, and never as an arbitrary act of the free will.

The question of whether the most voluntary of all voluntary actions of man depend on external and internal conditions has been answered in the affirmative. From this it inevitably follows that given the same internal and external conditions the activity of man will be similar. Choice of one of the many possible ends of the same psychical reflex is absolutely impossible; its apparent possibility is merely a delusion of self-consciousness.

Thus man's psychic life is a process of interaction with the object of his external environment. In the course of this interaction, beginning in childhood, a complex, evolutionary development takes place. In his *Reflexes of the Brain*, Sechenov sought to demonstrate from an evolutionary account of individual development how thought and consciousness originate as the result of inhibition or suppression of the last member of a reflex reaction to an environmental stimulus. The ability to think, to meditate, to reason, is signified by the chain of inter-connected notions and concepts which exist in man's consciousness at any given moment and which are *not* expressed in any external manifestation. "A thought is the first two-thirds of a psychical reflex".

The capacity to inhibit particular responses is also a learned activity: it is acquired by means of reflex associations in the course of human life. For Sechenov the concept of inhibition is absolutely central (no pun intended), from the point of view of the development of his theory of psychic activity it is almost more basic than the process of excitation. In the history of physiology his name will always be associated with the discovery of "central inhibition". This process can be demonstrated by placing salt on the cut end of the spinal cord of a decapitated frog: spinal reflexes, previously obtained by pinching the frog's leg (reflex withdrawal being the response) are completely suppressed.

By an extension of the argument to man, he deduced that spinal reflexes can be, and are, inhibited by the cerebral cortex: he succeeded in localizing the process in an inhibitory centre ("Sechenov's centre") in the brain. The essence of his theory is that *all* conscious and unconscious acts are reflexes and that the so-called "higher mental processes" char-

acteristic of human beings are the product of the inhibition of the motor response which is characteristic of reflexes at the spinal level. Consciousness, which distinguishes man from the animals, arises on this basis "as a kind of mirror, reflecting the surrounding reality". It seems to have no beginning and no end; the picture it presents is ever-changing, extremely variegated, not to say chaotic.

Consciousness can hardly be regarded as the ideal object of study. Neither is introspection to be considered the method of choice in studying the thought process. Because many of the links in the sequence of psychic acts, as these appear in consciousness, are missing, thoughts appear to be the original products of consciousness. But this is one of the main errors which necessarily result from the use of introspection as a method of investigation: it leads on to the second basic error—that of concluding that there is some choice of alternative courses of action. The real relationship between psychical activity and the external agents which initiate it and influence it as cause must ever remain obscure to introspection, since the subjective method cannot isolate the basic unit of scientific study, namely the psychic act. "The concept of a psychical act as a process or motion having a definite beginning, course and end, must be retained as fundamental".

This leads to the proposition that there is an affinity between psychical acts and nervous processes in the body. The reflex arc is the basic unit of physiological analysis, the psychical act is the basic unit of consciousness. In fact, the psychical act is simply a cerebral reflex: in certain cases the response termination may be *suppressed* (as in thinking), in others it is *intensified* (as in emotion). All acts of conscious or unconscious life, without exception, are reflexes by origin. Thus, the essence of Sechenov's teaching is that there are three separate mechanisms which control all man's psychic activity—the reflex arc, the inhibitory mechanism and the intensification mechanism. All talk about "Special Forces" is not only idle chatter but represents a return to animistic ways of thinking.

The essence of all philosophical theories concerning the body, the spirit and the objects of the external environment is based (according to Tylor) on real but wrongly interpreted facts. For our particular purposes we could add: "on the facts of life wrongly interpreted, because the savage is too ready to accept the voice of his self-consciousness." Actually the philosophy of primitive man starts out from the same basic psychical predispositions as the philosophy of the thinker of today who is guided solely by the voice of his self-consciousness.

Idealist psychologists such as Kavelin, with whom Sechenov engaged in controversy, imagine that there is some kind of inner vision: this originates from an alleged faculty with which the soul divides itself into two parts while remaining a single whole, one part critically looking at the other. The idealists teach that the human psyche is in this way unique and bears no resemblance to any organism, in the same way as they used to teach that organic objects bear no resemblance to inorganic materials, before Wöhler.

Sechenov takes this argument to be the *reductio ad absurdum* of psychological method—as indeed it is! He takes the view that physiology alone has the objective, scientific method essential for studying not only

the material substratum of consciousness but psychical activity as well. The object of study is in both cases the same, namely, the reflex act. The method is analysis of the objective connections between psychical acts and surrounding reality.

In a series of essays which have remained virtually unknown to Western psychologists, since they were published in relatively obscure Russian journals, Sechenov worked out in considerable detail a materialistic theory of the higher mental functions in man. Basing himself on Helmholtz's researches on vision and hearing, and Herbert Spencer's developmental theories, Sechenov stated certain basic positions which have only recently come into Western psychology through the work of Piaget. Whilst not rejecting the method of introspection entirely, Sechenov made little use of the findings of the "subjective" schools, having decided that a new kind of investigator was necessary before any progress could be made. He characterises the main defects of the subjective method as being an exclusive reliance on observation (which turns out to be, in fact, self-observation); an undue confidence in the voice of self-consciousness; the multiplication of special forces and faculties such as will, memory, attention and imagination; the deplorable habit of forgetting about the figurative and symbolic character of language, this leading to the vicious error of accepting a name as proof of the existence of a faculty or process.

The objective method of "physiologico-psychology" demands a new kind of investigator who would study psychical phenomena from the physiological point of view. In the meantime, awaiting the arrival of such a person, Sechenov developed a program of study for this investigator. In all this work, Sechenov was guided by two basic principles: that the higher mental processes in man are directly associated with the material structure of the sense organs and central nervous system, and, secondly, in spite of this limitation, our sensations, concepts and mental processes in general provide correct reflections of external reality. He attacked metaphysics quite directly on the grounds that it illicitly isolates man from all the conditions of his earthy life; it also, and equally illicitly, separates the mind from the sense-organs.

It is true that the external world exists apart from man and has its independent life, but man acquires knowledge of this world solely through his sense organs because the results of their activity are the source of all mental life.

In a remarkable article *The Elements of Thought* (1878), Sechenov analysed the origin of thinking, beginning with the most elementary reflex processes and ending with abstract thought. Following Darwin and Spencer he begins by stating the basic principle that we should begin the study of the thought process by investigating the mental life of the child. It is here that we can observe the shaping of thought from psychological products of a lower order. The source of thought lies in sensation—this is so in the child where the relationship is quite direct; in the adult the process is more complex. Adult thinking, in contrast to that of the child, takes place in terms of *systems*, not of units; it is also accomplished in terms of *abstractions*, not of sensory concrete objects.

Moreover, adult thinking works in terms of a long chain of ideational transformations so that both product and process are quite cut-off from their sensory roots. The problem is therefore to identify the developmental sequences which link the concrete, sensation-bound thinking of the child with the abstract, supersensual thought processes of the adult.

Sechenov makes the point that until the physiological mechanisms associated with our perception of the external world have been identified (and this only happened in the second half of the 19th century—Corti, Meissner, Wheatstone, Helmholtz, etc.) theoretical studies of thinking were condemned to use the abortive method of studying ready-made patterns of thought embodied in speech. This meant that it was impossible to study the basic, primary forms of thought in the order of their development since the elementary forms of sensation peculiar to the child no longer exist in the consciousness of the adult. Knowing the structure and functioning of the receptor organs as a consequence of the work of the physiologists mentioned, we can identify the nature of these elementary sensations. Anatomy and physiology can thus to a considerable degree substitute for actual observations on children. At least, this knowledge provides the scientific model in terms of which sensation must be explained. Herbert Spencer provides the other half of the model so to speak, in his hypothesis about the successive stages of neuro-psychic development: he supplies the key with which to solve the riddle of how thought develops from sensation.

In identifying the typical form of thought as a *sentence* consisting of three parts (subject, object, predicate) Sechenov cuts the Gordian knot of the relation between thinking and speech. The process of thinking in its most basic and general form is thereby identified as a confrontation between objects related to each other in terms *either* of similarity, co-existence or succession. These objects and relations exist in reality. Thought is a reflection of these real objects and real relations. In the intellectual development of the child there is a multiplication of the objects of thought: this increases the number of confrontations possible. There is also a continuous development of symbol formation and abstraction. But when the development is complete, even at the highest level of intellectual and moral discourse, there is not a single relation between the objects of thought which cannot be discovered in object thinking.

It might seem that man, after his primary acquaintance with the external world, transfers all the links, interdependences and interrelations between the objects already known to him to new objects, despite the fact that in the eyes of man, these links and relations are real when they are in their proper place, and assume a conventional or figurative sense when the transfer takes place.

The whole process begins in sensation and in the perception of the external world. The succession of similar and of different objects preceived by the child leads to *comparison*. Here, by a natural process, the mental expression of a particular object is transformed into a symbol or sign which designates a class or group of related objects. This entails a process of *analysis* whereby separate parts of objects are identified, and given a symbol. Analysis leads on to *synthesis*: there is a reunion of the

separated parts by virtue of their co-existence or succession in time. These three basic transformations of sensation represent the ways by means of which primary sense-data are transformed into ideas.

Sechenov accepts Locke's contention that the child begins life with no mental content. This is the "premental stage". The child then passes into the "sensory" phase where the external world provides material or stimuli for sensation. This material is transformed into sensory products of the mind by the maturing sense organs. The third stage is that of "object thinking": here the relations and connections, the interdependencies between objects are reflected in consciousness. Object thinking consists of the *elucidation* of these relationships. The fourth stage is that of adult thinking. Here more complex and abstract concepts and relations are generated by combining the various simple forms and raising the whole process to a new super-sensory level of abstraction. At this stage thought appears to have a life of its own: it has the appearance of being completely independent, and even divorced entirely from environmental connections. But even mathematics and metaphysical thinking represent a series of sensory signs moving along definite neural pathways.

The whole process of development consists of an ever-increasing differentiation of primary undivided forms (sensory products in the shape of nerve impulses which owe their existence ultimately to environmental influences). These act on a pre-existent and inborn organization of matter (man's central nervous system). This formulation of the problem in terms of the interaction of two factors—inborn organization and external influences—is taken from Spencer. It puts an end to the existence of the different schools in psychology which existed in Spencer's day. Sechenov's great contribution is to work out in detail the actual changes that occur in the primary materials and in the nervous system, parallel with the development of the thinking function. This is done on the basis of known and established physiological data and laws. In the course of this exposition Sechenov develops views about attention, memory, the concepts of time, space and causality, mathematical thinking, etc., which have been, and remain, extremely influential in the development of Russian psychology.

Sechenov had a number of distinguished pupils and disciples, including such well-known physiologists as Pashutkin, Wedensky and Samoilov. These studied under him directly. In addition, Pavlov, Bekhterev and Ukhtomsky were strongly influenced by his writings. On the other hand, his views were under strong attack by idealists such as Strakhov, Kavelin, Edelson, Stadlin and Chelpanov. He found it necessary, in view of the persecution to which his writings were subjected by the censors, to defend himself against the charge that his theories undermined morals and human responsibility. This was done in an article on the theory of freedom of the will, published in 1881. In this, he defended the view that nothing was changed in practice with regard to rewards and punishments, culpability and innocence, if we accept that human actions are subject to the law of causality. What changed was our *attitude* to the offender.

In the absence of free-will, society must of necessity regard the defects of its members as products of a hereditary pre-disposition, ignorance, un-

couth manners, bad upbringing, lack of brains, poverty, idleness, laziness, etc.; consequently, it is not entitled to treat its vicious members in a spiteful way, and all the more so to punish them for their misdeeds. But society is obliged to isolate such defaulters and to try to reform them, just as it is obliged to take care of those who are mad or sick. . . . Consequently, the external aspect of the action by which society protects itself from its vicious members remains invariable, no matter whether free-will is recognised or not. The only change is in the sense of the actions—retribution is replaced by the concept of reformation.

Sechenov maintained that the moral value of an act is determined by its aims and the conditions under which it is performed. The question whether it was, or was not, a result of free will has really no relevance—the so-called psychogenetic aspect must ever remain concealed from us. As far as corrupting morals is concerned, the moral sense develops in exactly the same way as the aesthetic sense, through education and example. This is the basis of moral behaviour, not the metaphysical fiction of the free-will. Action is a conscious thing, conscience and reason take part in it. If we accept the theory of causal determinations, man can equally be regarded as a moral and rational being as if we accept freedom of the will. Far from denigrating man, the theory of the dependence of human actions on the conditions of the external and internal environment teaches us tolerance towards our neighbours, meekness in ourselves, faith in the triumph of good and the reformation of evil.

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A. FORREST

Clarendon's *Dialogue Concerning Education*: A Neglected Document in Seventeenth-Century Educational History

That Clarendon was sufficiently concerned about education in his day to write a tract on the subject has been almost totally overlooked by historians. His work takes the form of a "dialogue", whose participants reflect in the flow of debate the spectrum of educational opinion among those "persons of quality" to whom Clarendon himself belonged. The state of the English Universities, the importance of the Inns-of-Court, the plight of the younger sons, the educational value of travel and the theatre are all considered. Illuminating thus the social history of the time, and presenting the thoughts of an eminent Royalist statesman, Clarendon's Dialogue ought to assume a significance at least equal to some of the better-known Puritan tracts.

A Royalist Tract

Among historians, literary critics and others, Edward Hyde, first Earl of Clarendon (1608-74), is generally noted for his central involvement in the political life of his time, for his association with lawyers, poets and the scholarly group at Great Tew, for his monumental *True Historical Narrative of the Rebellion and the Civil Wars*, and for his *Contemplations on the Psalms*. He is, however, except for his administrative work as Chancellor of Oxford and for lending his name to the most venerable of scholarly presses, not normally known for his connection with education. This is unfortunate, for he is the author of *A Dialogue concerning Education*, which is not only a valuable social document, but also an appealingly humane work of considerable literary merit.

This tract has a number of claims upon our attention. Most historians of education working in the period do not appear to be aware of its existence, yet it expresses the views of an eminent and powerful aristocrat, who was both actor on, and chronicler of, the stage of English public affairs during its most turbulent period. Reasons why the tract has been

universally overlooked are, of course, not far to seek. The *Dialogue* apparently remained in manuscript form, perhaps being privately circulated among friends, until the early eighteenth century, when it was partially hidden (or indecently buried) by inclusion in a collection of miscellaneous tracts, *A Collection of Several Tracts, published from his Lordship's original manuscripts* (London, 1727); and since the work has never been edited and published separately, it has remained unnoticed and obscure. Scholars may also have been blinded by the fact that Clarendon was not a member of the party which created most of the educational ferment during the English revolutionary period, while his claim to the title of educationist has undoubtedly been overshadowed by his fame as political historian and statesman. But whatever the causes of this serious neglect, there is no question about the tract's worth. Clarendon's discourse on education is possibly most valuable, because it gives the testimony of one, who, during the Civil Wars prominently upheld the Royalist cause. This is a side not frequently heard about in surveys of seventeenth-century educational thought. To place, for purposes of comparison and contrast, Clarendon's views beside the much more widely-known opinions of the Parliamentary Milton can be illuminating, especially when we reflect that these men were almost exact contemporaries. Moreover, the piece is not only interesting for the educational ideas it expresses, but remarkable also as a work of literary art. Its use of the dialogue-form, which is a fairly common literary *genre* of hallowed lineage, allows for the give-and-take of debate, of discussion which clarifies the issues, permits the modification of stands and urges the fairness of a central position. Throughout appear all Clarendon's exceptional gifts of colloquial discursiveness and character-realization that are so eloquently displayed in his more famous works. Indeed, from this point of view, Clarendon's *Dialogue concerning Education* by no means suffers by comparison with Milton's *Of Education*.

To ascertain the date of composition, we have apparently no external resource beyond the knowledge that the *Dialogue* was not published before 1727; consequently, we must be guided by internal evidence alone. And here the most eloquent witness resides within the text itself, especially the lengthy debate about the stage. This ranges far beyond a mere discussion of the educational value of plays to a consideration of grave allegations that constituted the main substance of the Puritan attack on the theatre, especially during the middle and late 1630's. From such testimony it may be reasonably conjectured that the *Dialogue* was written at a time when controversy over the theatre still raged among intellectuals. At the latest, a date of 1646-48 might be assigned on the strength of Clarendon's having leisure to give his mind to it, during the period of his first exile in Jersey. In any event, the work can be placed quite close to Milton's *Tractate*, published in 1644.

Although the *Dialogue concerning Education* is a wholly independent work with a unity of its own, it is actually a sequel to another dialogue in the same volume of Clarendon's papers. It follows *A Dialogue between A. an old Courtier, B. an old Lawyer, C. an old Soldier, D. an old Country Gentleman, and E. an old Alderman, of the want of Respect due to Age*. When an attempt is made to pursue the subject of education in this dia-

logue, the old Soldier (or Colonel) abruptly breaks off the topic, saying;

I will wholly decline one Argument in which all of you have enlarged very much; that is, of Education: which though it may naturally enough fall into the Argumentation in which we are now engaged, and probably is a real Cause of those Defects, and that Degeneration which is so grievous to you; yet I look upon it as so fit to be an Argument apart, and not to be mingled with any other, that whereas one of you threatened to fine the Alderman another Dinner, I shall concur with you in that Vote, and dedicate that Afternoon to another Conference in this Place upon that Subject of Education, which without doubt deserves a very deliberate Disquisition. (*Dialogue*, p.301)

At the end of the discussion, the Alderman recalls this, and he proposes a further meeting in a couple of days' time, at which he will provide dinner, for the purpose of debating education. There is, however, to be an addition to the present assembled company; the Alderman announces that he will invite his friend, "the good Bishop", who "having been well bred himself, and seen Foreign Parts, will supply [them] with any necessary Animadversions and useful Reflections" (313). Such, then, is the setting for the work that immediately follows, which is our text: *A Dialogue between the same Persons and a Bishop, concerning Education*.

Dialogue on Education

The company having assembled, the Colonel at the outset offers a definition of the aim of education: "to dispose Men from Children to Wisdom and Virtue, whereby when they come to be Men, they may be delighted to tread in the same Paths" (313). This is the objective he would seek to attain in his scheme, comprehending only the education of 'noble and generous Persons . . . the Children of Persons of Quality, who can be at the Charge (i.e. expense), for good Education is chargeable'; the rest he would leave to "those common Ways which their Fortunes as well as their Inclinations lead them unto" (313). The Colonel goes on to say that he will talk of "Rules towards their Education", from the time that "they first begin to speak" or "even from their Entrance into the World," if anyone wishes (314). The Alderman makes some comments about education at the mother's breast, for he believes the first year of life is very important. There follows an argument as to the advantages and disadvantages of employing a "wet" nurse. The Alderman is concerned that infants should be looked after by their own mothers throughout this formative age, but the Lawyer is opposed to obliging mothers to nurse their children. This brings forth what amounts to a plea for planned parenthood from the Country Gentleman, who berates the Lawyer for being "very wanton at this Age" (314). The Bishop protests that while this may be an important stage, and while it may indeed be desirable that women nurse their own babies, the Alderman lays "too heavy a Weight upon the poor Mothers", who can hardly do as suggested, without the consent of their husbands, whose rights must be protected. The Bishop's solution is that the greatest care should be taken to find a nurse "of untainted Reputation, of unquestioned Virtue, and of a Mind as well formed as can be found" (315). The Courtier rather impatiently has the last word on this very early stage:

it may well be that a robust healthy nurse is better than a delicately-bred lady.

The arguments on both sides being fairly even on this matter, the group proceeds to discuss the next stage, the importance of which they are all agreed upon. As the Colonel puts it: "This is the Time when their Minds, and even their Nature is to be formed" (317). It is "a general and a fatal Mistake" to believe that children are incapable of learning, before "they can understand the Reason why any thing is good, or why the other is bad" (315). On the contrary, this is the very time to instil the good. This aspect of early training is rather "negative". Parents must ensure that a child learns no foul language, sees no wrong acts, and is never terrified by tales that engrave themselves on the infant imagination, for as the Country Gentleman says: "The Vices . . . brought with him out of the Nursery" (316) can never be eradicated. "To keep them from learning what is naught, is the greater Business than to teach them any Thing that is notable", confirms the Colonel (316).

On the positive side, such things as learning to dress neatly, deportment, elocution and articulation, the social graces generally, can all be acquired painlessly. This is the age when "the Tongue most delights in prating," when children love to play-act and imitate, so all this can "be taught and learned in Play and Sport, without restraining them from any of those Childishnesses which are natural to their Age" (317). Even foreign languages may be learned "by Rote, and without the Formality or Method of Grammar" (317). It is also important that children be taught "Gentleness, and Courtesy, and Affability towards all Men", while "all the Seeds of Pride, which will sprout up quickly, must be strictly watched, and all its Product extirpated", for pride is the cause "of all that Ignorance and Folly which usually disfigures the Lives of great Men" (317).

The Colonel believes that this play-learning stage should continue to age nine or ten. The Courtier immediately objects to the delay in introducing book learning. He knows boys who understand Latin and Greek well by that age. The Alderman, interested in long-term results, queries the effectiveness of this. "Did they understand proportionally afterwards, when they came to be Twenty?" he asks. "The Profit is not worth the Pains" (318). But the Colonel would "not restrain Children from learning as much as they have a mind to" (318). However, once the child is ready for serious study, he is definitely in favour of formal schooling taking place in a formal school setting. This is much to be preferred to the private tutor. The benefit derived from "the mutual Conversation of many Children together, of different Ages and different Parts, and the Imitation and Emulation that arises from thence" is not to be underestimated (318). Unfortunately the existing grammar schools fail in three ways, the Colonel claims. The children "spend too many Hours together at their Book," and too many hours on their own when they get into mischief, which leads to the third fault, "their staying too long in those Schools, even to the Age and Growth of Men" (319). When they do leave, they "carry all the Vices from School" with them (319). The Colonel would therefore like to impose arbitrarily a compulsory school-leaving age of sixteen, by which time any boy should be ready for the University, the

army or other course of life. The Bishop heartily agrees with this latter proposal, since he is convinced that the "Reproaches of Dissoluteness and Debauchery" that dishonour Oxford and Cambridge are largely brought about by "those over-grown Boys" (319).

The Lawyer is also in agreement, but he wonders how the Colonel proposes to remedy those faults in the schools. "Four to five Hours in the Morning, and as long in the Afternoon, without any Intermission", is "too long to be intent upon their Books", the Colonel declares (320). He suggests that two hours is long enough at any one time for instruction or imparting of information; the rest of the time ought to be given over to discussion, debate, acting, and other exercises such as riding, bowling and dancing. In his opinion the mind should be relaxed frequently with a "Succession of Exercises and Recreation" (320). In the ideal boarding school the master would be a well-bred foreigner, French or German, or a person who had travelled extensively. He would be a person of "unquestionable Integrity in Religion", but not one in "Holy Orders", lest he be diverted from his primary task, which is the "learning of Grammarians" (321). The master should also be married, so that his wife may be available to look after the welfare of the boys, who will be between the ages of nine and fourteen. The instructors of the "Exercises" are to be Frenchmen, since they teach "exercises" best. The all-inclusive fee would be 100 pounds per annum, and the enrollment thirty. The Colonel believes that if his ideal school could only be founded, catering as it would for "Persons of notable Parts and Sufficiencies" (321), similar schools would be established very rapidly throughout the land. And certainly, he thinks, if continual care were taken throughout the five-year course to instil the right notions of good behaviour, courtesy and manners, the average child would be ready (at age fourteen) to go on to university.

The old Country Gentleman questions at this point whether university is the best place for them next to go. He says that many "Great Men" are now refusing to send their sons there. The Courtier, who knows a great deal about this, relates three main complaints heard at Court about Oxford and Cambridge. The universities are places of debauchery, "Schools to learn to drink in, which is the Poison of good Education . . . the Learning they get there is impertinent, being only a pedantick way of Disputing and Wrangling"; the students' manners are appallingly rude, and the students themselves gauche in the company of ladies (322). The Courtier therefore feels that these universities might well be by-passed altogether, and the time devoted to travel, and to learning languages, exercises and behaviour abroad, especially in Paris. The Alderman, however, is scornful. Those who have spent a few years abroad often return impudent rather than confident: "all their Learning is in wearing their Clothes well; they have very much without their Heads, very little within" (322). In his opinion, travel should wait until after university; nor is he convinced that the universities have indeed altered so much from his day, when they were "places of great Sobriety" (323). The Lawyer strongly supports this view and claims to know the cause of the slander against Oxbridge: too many of the nobility, having no love of the ecclesiastical authority, merely pick a quarrel with the English universities as an excuse

for sending their sons abroad, which is not only subversive, but also prejudicial to their own interests in a peculiarly ironic way, since "the Nobility is there rooted out" (323). Nevertheless, the Lawyer concedes that it may be that "those lubberly Fellows, who come from great Schools after they are Nineteen or Twenty Years of Age" bring their licentiousness with them; and he invites the Bishop to give his opinion (323). The Bishop voices his concern about the prevalence of drinking throughout the country, but holds that there was never a time when care was more diligently taken by the university authorities "to propagate Learning and good Manners, and to suppress and discountenance all kind of Vice, and particularly that of Drinking" (324). To be on the safe side, however, he would favour the formation of a Royal Commission to visit the universities and investigate conditions, so that excesses might be discovered and corrected, and the cause of learning advanced. He is highly pleased that the Colonel should so insist on the worth of a university education, but hopes that he will not stop short at pointing out the defects in the universities "as may be remedied or supplied, to make them contribute to all the manly Parts of Education, as well as to Letters" (324).

The Colonel resumes with a vigorous defence of his native universities, which are less corrupt and dissolute than those in Holland, France and Italy that he knows well. While he firmly believes in the worth of university education, he points out that both the course and intent of the study must be orderly and serious. Where he finds the English universities defective is "in providing for those Exercises and Recreations, which are necessary even to nourish and cherish their Studies"; this disadvantage, he believes, may well contribute to the decisions of some to send their sons abroad (325). He would like to see Oxbridge give full scope to riding, dancing, and fencing, and particular hours assigned to those "exercises" as to their "studies". This would require the erection of an adequate building, the provision of a stable and riding-area, a stock of horses and a subsidy for a "yearly Pension" to several masters, whose maintenance could not be covered wholly by the proportionate fees paid by students according to their means (326). This subsidy might appropriately come from "the Royal Bounty," since the King would "receive some Recompence in the good Education of his Subjects . . . by which they would be much better prepared to serve him, and their Country" (326). As for studies, the Colonel strongly advocates the teaching of Logic and the practice of "Disputation"; nor would he permit the person of quality to choose whether he might attend "the Publick Scholastick Exercises of the House", which formerly was the case (326). The art of logic, learned largely through formal disputation, is invaluable, because it enables men "to discourse reasonably, and judge of the Discourses of other Men" (326). The Colonel could wish that Oxford and Cambridge would emphasise two things much more: "the Custom of speaking Latin in Conversation, and at Meals"; and "the publick Acting of Comedies and other Interludes in *English* as well as *Latin*", to promote confidence and grace in speech (327). If the students' time is well distributed "between their Study and their bodily exercises", and their conversation held with others "a little superior to themselves in Age and Parts," they may in three years have

read enough in "History, or any other Science their Genius shall dispose them to, as shall raise an Appetite in them to prosecute it in any Condition of Life they can betake themselves to" (327). University education might, then, conclude at the age of seventeen, when the student could well be sent to the Inns of Court for two or three years.

The Courtier is shocked by this last suggestion. Is all education, he asks, to end in the training of the nobility and gentry to be lawyers? He maintains also that the Colonel makes no distinction "between Elder and Younger Brothers, between the Heirs to great Fortunes, and those who must make their own" (327). The Alderman thinks the nobility and gentry could do worse than learn something of the laws and customs of the country, and better understand London, from a stay at the Inns of Court. But it is naturally left to the Lawyer to make the greatest defence of the Inns of Court. The great benefit of a stay at the Inns of Court is that of mixing with the flower of the country's gentlemen; no one who spends time there can fail "to know more of the Kingdom and the Government thereof" than he could otherwise (328-29). The Bishop is disposed to feel that there is considerable merit in associating with such a society as is found there, while the Country Gentleman has learned from observation that those who have the advantage of this experience are better able to manage their estates and the affairs of the country.

The Colonel now points out that when he suggested sending his students to the Inns of Court from university, he had not intended that they all become lawyers; two or three years there should rather furnish a maturation stage, when the student will finally decide for himself which course of life he is now to pursue. A stay there will provide the essential experience of living in London among good company, and what is learned of the law and of the proceedings of the Courts of Justice will fit him for any subsequent career. There he will practise dancing, riding, fencing, tennis; attend plays and participate in other recreations; make tours of the country and study the ways of life of the people; travel more extensively, be the better able to evaluate what is observed and so judge among nations. All this, conscientiously done at the Inns of Court, will make the student so accomplished that he will be bound to succeed whether he applies himself "to the Court, or to the Country, or to the Camp" (331). The Colonel then reverts to the Courtier's complaint that his scheme makes no distinction between Elder and Younger Brothers. That, says the Colonel, was intentional: he feels very strongly about the "ridiculous Preference and Precedence which is given to the First-born, who is taught to know before any Thing else, that he is an elder Brother; that is, that he will have Estate and Observance enough, how little Wit soever he attains to; let him be sure to be proud and ignorant, for he hath where withal to maintain both. Nature and the Law gives him Precedence, and a greater Share in the Inheritance, but that is no Release to the Father of any Part of his Duty in the Education" (331). The Colonel confesses himself quite out of patience with the prevailing situation, and wishes England would copy "that Country, to which we most resort to amend our Breeding", where the greatest care is taken for the education of the eldest son (332).

The Courtier asserts that he is now not only convinced, but converted to the view that a sojourn at the Inns of Court would be invaluable. The Bishop, however, at this point accuses the Colonel of a sin of omission: he has said nothing so far about religious instruction. The Colonel counters that in fact religious training has been implicit at every stage of his ideal educational process, particularly in the inculcation of "integrity of Manners" (333). Although opposed to the encouragement of religious disputation, and to "intoxicating the Heads of young People with the Fumes and dark Notions of Religion", he would like to see "a good Negative Catechism of Religion" taught to children "from their Cradle", so that they might know what to avoid; and this "should serve for their full Instruction till they are Men" (333). But the Bishop wants more than this. He would like the young to learn something of "the History of their own Church and Religion", so that when they travel, they might defeat the impudent Reproaches" of foreigners, who hold that "the Church of *England* hath no other Original or Foundation than the inordinate Lust of *Henry* the Eighth" (334). In addition, he would have them learn to pray, morning and evening, for God's guidance.

The Lawyer now focuses on the last stage of the Colonel's plan, which is travel, a most controversial issue of the day; he therefore raises the question of the real educational value of travel. The Courtier is quick to point out the great advantage the experienced traveller has at Court: travel teaches fluency in foreign tongues and is the making of ambassadors. The Country Gentleman at once pounces on this, and insists that the Courts of France and Spain do very well in matters diplomatic without learning English. Indeed, glibness in a foreign language is fraught with danger, since it may lead to serious oversights in the making of treaties with foreign powers. Not least, an eagerness to accommodate others in the learning of their tongue may appear an obsequious condescension. In the Alderman's opinion, however, "it is enough that able Men are made more able" by travel (338). The Bishop believes that practice in speaking a foreign language is a valuable benefit of travel, since "the Gift of Tongues" serves "for the Advancement and Propagation of Christianity"; it may also make the English less insular and enhance their general knowledge (338).

In reply, the Colonel concedes that some men undoubtedly learn nothing from travel: "Travel cannot make Men wise in spite of Nature" (339). Even proficiency in speaking foreign languages can be attained by study at home. But for the man of rank and means, who would be most likely to travel, that occupation can provide the greatest advantage in giving him access to foreign dignitaries. As the Colonel sees it, the two great ends of travel are the improvement of abilities and understanding through association with eminent people abroad, and the correction of manners, including national vices, by means of the example shown by those "better instructed and cultivated" (34). Accordingly, he recommends the Grand Tour as starting in France, proceeding to Italy, then Spain, and through France again (spending almost a year in Paris) to Belgium and Holland, returning thence to England. This educational progress should take no more than three years altogether.

The Alderman is critical of the suggested itinerary, holding that a visit to Germany would be of more lasting benefit than a journey to Spain. But the Colonel will have none of it: there is nothing good about Germany in his opinion, and "if they remain there one Year, they had need stay two in France afterwards, that they may entirely forget that they were ever in Germany" (343). Although the Country Gentleman is sceptical about the moral worth of travel, he is willing to admit that it can be beneficial to some.

The Country Gentleman, however, is more concerned about a matter that had been glossed over earlier: why does the Colonel in his ideal educational scheme give so central a place to the theatre?

The Colonel defends his position by holding that his system must take account of the youth's leisure; and when he brings him to London, which "is the great and publick Stage of the Kingdom", he ought to put the student in mind of the theatre. The theatre provides "the most innocent Mirth, Wit, and Instruction that ever was or can be made for the Delight of a Nation" (345). Just as he would advocate play-going as a pleasurable and profitable mental pastime to Londoners, so he would strongly support hunting and hawking for those in the country, such physical recreations "being manly Exercises, [which] keep the Body still vigorous and in health, and the Mind better disposed to honest and publick Thoughts" (346). The Country Gentleman is delighted to hear this expression of the Colonel's belief in *mens sana in corpore sano*. But he cannot forbear to rub in the superiority of the countrymen over the townsmen: "none of your Travellers ever keep us Company in our Field Sports; their Bones cannot bear leaping a Ditch, nor their Perriwigs a strong Wind; they are only for Chamber Exercises, and such Recreations as may not disorder their Hair or shake their Joints" (346).

The final word is left to the Bishop. Although he does not attend the play-house himself, he would not deny it to others. Like the Colonel, he acknowledges that "wise States" have always catered for the people's desire for such entertainment, and in his opinion the theatre is vindicated, because it provides the innocent refreshment of the human spirit. So long as the theatre is carefully regulated, he would be satisfied to leave it alone. Perhaps the custom of men acting as women ought to be changed and women allowed to play themselves, for no offence "hath been found when all Parts have been performed by the other Sex" (347). The Bishop then adds his thanks for the "excellent Conference" (348).

Relationship to Clarendon and the Educational Problems of his Time

Clarendon's tract, then, mirrors the diverse attitudes of the day towards certain aspects of education, the medium of dialogue lending itself to the voicing of several different sides of the issues involved. But throughout the *Dialogue* Clarendon's own educational ideals are clearly formulated, including his belief that the topic is of concern to all thinking men of his time. The fact that he wished to make education "an Argument apart" (315), when the subject had naturally grown out of the preceding *Dialogue of the Want of Respect due to Age*, is testimony enough to the importance he accorded to it. And since education and the Church were so closely

linked in men's minds, it seemed merely natural that a representative of the Church should be specially invited for this particular discussion. The men who meet together on this occasion, therefore, constitute a microcosm of upper society, the main groups to be found among educated Englishmen in the early seventeenth century: the Country, the City, the Court, the Law, the Army, and the Church. But typical as those *personae* are, together they embody a view that is essentially socially restrictive or selective. Yet Clarendon nowhere suggests that he is opposed to education of the lower classes; it is rather that he prefers to leave this for others to deal with, perhaps sensing the futility of attempting to treat education of the masses, when "good Education is chargeable" (313)—that is, expensive. No doubt, too, his exclusive interest in the nobility and the gentry, "the Children of Persons of Quality" (313), is a function of his background as a member of the Court circle.

As a courtier, Clarendon deplores the lack of grace, and the shallow, superficial learning that he meets at Court. It is to the lack of proper training during the early period that he attributes the dreadful *gaucherie*, unpleasant speech habits and inability to converse with ease that was evidently very prevalent in his time:

How few there are who make an Entry into a Room, where . . . if they find the Eyes of Men upon them . . . [they] put their Heads and Hands and Feet into Twenty Antick Motions . . . all which proceeds from their not being taught to walk and move in the Age we speak of [when] that natural Assurance which produces Steadiness and Comliness of Motion . . . [is] best received and fixed in us (317).

A properly planned education, he believes, will eliminate such awkwardnesses, in movement as well as in speech.

The background and loyalties of Clarendon are further exhibited in his adding a Bishop to the group. This not only indicates his belief that religion is an essential part of his scheme, but that religion to him means the Established Church, of which, as a Royalist, he was inevitably a staunch supporter. Both Clarendon and Milton were originally destined for the Church, but for widely differing reasons their courses were altered: Clarendon became an "Eldest Son", when his elder brothers died, thus making it unnecessary for him to continue his studies at Oxford. Milton, of course, felt a higher vocation. Moreover, Episcopacy was anathema to Milton: the only occasion he would have allowed a bishop to participate in a learned discussion would have been during a council in Hell!

The value to the author of his subsequent education as a lawyer is also clarified by the *Dialogue*. Doubtless this reflects a social phenomenon, which saw more of the nobility and gentry attending the Inns of Court than the Universities of Oxford and Cambridge combined:

At this period there were in practice not two but three universities in the kingdom. The third was the Inns of Court, whither increasing numbers of young noblemen and gentry resorted in order to study the law and at the same time pick up some of the airs and graces of the nearby Court. In the late sixteenth and early seventeenth centuries more nobles and landed gentlemen acquired a smattering of a legal education than at any time before or possibly since. Indeed although the popularity of both the universities

and the Inns of Court rose together, the Inns were at all times more frequented by the gentry than both the older universities put together. (Stone, p.690)

Nevertheless, one feels that the legal training acquired by Clarendon himself at the Middle Temple, with all its concomitant cultural activity, such as the theatre and travel, leads him to parade its merit. Similarly, his budding ability as a politician is related to other emphases in the *Dialogue*: the necessity for a basic understanding of the ways of government, and the advantage to be gained by exposure to foreign dignitaries and to the refinements of diplomacy. Hence the courtier, the Royalist, the lawyer and the politician all contribute to Clarendon's total concept and control its evolution.

The various occupations, loyalties and interests that make up Clarendon the man are paralleled by various aspects of his entire scheme of education, which is intended to produce the complete or finished scholar, as equipped in social graces as in formal learning. It is precisely because a well-rounded education requires a healthy body that Clarendon is careful to allot time to riding, dancing, fencing, and other physical activities. In this insistence on the education of the whole man, Clarendon, of course, gives voice to the ancient idea, first considered by Plato, Aristotle and Plutarch, and later developed by the early Humanists like Erasmus and Colet, who maintained that the training of the body should accompany the training of the mind. (Smith, p.403). Although this approach to education that Locke later described as "the sound mind in the sound body", was far from new, "the idea of all-round education for young men of birth became a popular and influential one" in England through the works of such men as Elyot, whose *Booke named the Governour*, published in 1531, also deals, like Clarendon's *Dialogue*, with the education of an elite. (Jarman, p.187). Indeed, there was a growing propensity, as Roger Ascham puts it, "to joyne learning with cumlie exercises". (Jarman, p.183). But the idea of "manly exercises" is also derived from the gallantry of the chivalric code, which was part of Clarendon's heritage, in so far as in Tudor England humanism and the old chivalric ideals met and blended.

It has been observed that after the 1530's there tended to develop in England two currents of thought on education. First, among the nobility there was propagated the extreme form of humanism castigated by Erasmus, that one learns purely for ornament or pleasure; the opinion that "too much learning lowers the dignity of rank" tended to prevail. (Simon, p.394). It is precisely this attitude that Clarendon strongly criticises (the Colonel says it quite "drives all Patience" [322] from him) in his insistence that the eldest son be educated at least as well as his younger brothers in order to manage faithfully his patrimony. But if "gentlemen were beginning to appreciate learning in relation to its uselessness, there were others to value it according to its use and the benefits it might bring". (Simon, p.397). This was the second stream of educational opinion: the application of knowledge to social and economic needs. Bacon revitalised the issue, though the point is sometimes overlooked that he did not thus dismiss valuable aspects of knowledge, which were not directly applicable to "useful" purposes. When, from 1640 on, Bacon's

ideas became readily available and were widely disseminated and discussed, this utilitarian view became more deeply entrenched. A study of his *Dialogue* makes plain that Clarendon was well aware of the urgent need to bend the education of the gentry towards this more practical goal. His views are consequently wholly in accord with the progressive educational thought of his day, representing as they do a serious attempt to discuss many of the contemporary social problems afflicting the aristocracy. For that virtue alone his *Dialogue concerning Education* can share a significant place with other educational treatises of the seventeenth century, and certainly ought not to be neglected any longer.

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F. SUKDEO

An Assessment of Student Quotas and Fees In Alberta Universities

A cost-benefit analysis of the contribution made towards the education of foreign students at Albertan Universities and of their contribution to the economy is attempted. It is concluded that it would be premature to establish quotas or a differential fee system for foreign or out-of-province students until more satisfactory methods of classification of students is established. On the basis of available data, a strong prima facie case is made out that Alberta gains much more from such students than it contributes towards their education. (Dr. Sukdeo, formerly Research Officer, H.R.R.C., Alberta, is now in the Department of Economics, University of Guyana, Georgetown, Guyana.)

Introduction

In the context of the "brain drain", this paper examines the evidence and implications of restricting the enrolment of foreign and inter-provincial students at Alberta institutions of higher education. In some quarters it is argued that these students are a liability to Alberta tax-payers, that they account for a substantial proportion of education expenditure, and that they make little or no contribution to the economic growth or the welfare of Alberta society.

An increasing demand for high quality education at all levels is a post-war phenomenon with a direct effect on escalating educational costs. With expectations directed towards an ever higher standard of living, and with the population increasing rapidly through natural increase among Albertans, inter-provincial migration, and immigration, the demand seems to exceed the resources in terms of income and manpower. Faced with this situation, with a policy to curb inflation, with budgetary constraints, the provincial government is committed to restricting spending in several departments. Apparently education, one of the largest items of expenditure in the provincial budget, is considered to be well suited for such economies, especially at the university and college levels.

Definition of Non-Alberta Students

In order to analyze published data on students of non-Alberta origin, it is important to distinguish the categories under which students are classified and their limitations. There is no precise answer to the question what constitutes a foreign student or an "inter-provincial student" from another province. The Universities of Alberta, Calgary, and Lethbridge have different definitions for these categories, and even present their annual statistics differently.

The difficulty arises through the inconsistency of student interpretations of questions about their home address, province of origin, and country of citizenship. Home address is often given either as the present residential address or as the permanent address. Moreover, the three addresses are interchangeable, as students (or migrants in general) experience and expect physical, social, and economic mobility. A student from Manitoba, after a year in Edmonton, aware of a favorable demand for his skill after graduating, is likely to consider his Alberta address to be his home address.

Even if students in their first year define home address as their parents' address, or the address which indicates the last school they attended, the majority can only temporarily be classified as "belonging" to a given province. A better index to determine origin of inter-provincial students is the province of first permanent employment after graduation.

One would expect that all students on student visas would give as their "home or permanent address" an address in their country of origin. But this is not entirely borne out by the statistics in the Annual Reports of the Universities. For example, in 1969-70, at The University of Alberta, there were 125 students who gave the United States as their home address. In the same year, there were 137 Americans on student visas. Thus, at least 12 Americans on student visas gave a Canadian address as their permanent home. This number is probably an under-estimate if one takes into account students on immigrant visas who give a United States address as their permanent home. This pattern is repeated for other nationalities.

One has to be aware that students are one of the most mobile sections of the population, tending to move to locations with attractive and expanding job opportunities. Considering the "brain drain" of teachers, doctors, and other professionals to Alberta, it seems rational to hypothesize that a large proportion (perhaps an overwhelming majority) of "inter-provincial" students remain in Alberta. If this is so, then their selection of Alberta as a home address is compatible with the reality of their life-expectations. Even those who consistently give a non-Alberta home address do not always constitute a large proportion, especially of teachers who seek employment opportunities in this province at the end of their university education. Consequently, much of the concern about the increasing enrolment of "inter-provincial" students seems misplaced: and to imply that other provinces are indirectly receiving "financial aid" from Alberta which enrolls large numbers of their students is irrational.

According to recent statistics released by the Alberta Teachers' Association, the supply of school teachers exceeds the demand. According to the report on "The Market Demand for Teachers in Alberta," (Shapiro,

1971) the end of the shortage of teachers is concomitant with the levelling-off of enrollments in school, together with the increasing output of trained teachers from Alberta universities.

The category of "foreign student" is even more complex. They hold either "landed immigrant" status or student visas. Students are clearly defined in their first year. However, it is the practice amongst the majority of graduate students during their first year, and of undergraduates in their second or final year, to change their status from "student" to "landed immigrant". In the average year, according to data and information acquired in the last few years, about 40 percent of all foreign-born students graduate from Alberta universities with the legal status of "landed immigrant". By definition, such students have indicated their intention of remaining permanently in Canada.

It is most likely that the majority of these students remain in Alberta. Assuming that they do, provincial expenditure on their education is not a loss but an investment for the development of the province. Considering these changes to immigrant status and the return rate amongst foreign-born students, the net population of genuine foreign students (those who eventually return to their country of origin) would be significantly smaller than the figures which appear in the Annual Reports of the Universities.

The low return rate of foreign students to their countries of origin is explained in terms of socio-economic mobility: there exist compelling factors which attract people to a society where output can be maximized with the highest possible economic and social rewards. The majority of such students pay their own way through the university system after their first year and, like other students, they are indebted to financial institutions on graduation. The immediate solution is to pay off these debts and acquire capital with which to return home, or to pursue the materialistic life of Canada. The realization of either of these goals takes a number of years: it is suggested that during this period the tax payers of the province are indirectly repaid for financing the education of these students.

Foreign students have been singled out by proponents of higher and differential fees: this is based on the opinion that the majority of foreign students are wealthy and can easily afford to pay increased fees. Additionally, it is believed that increases in tuition fees with certain conditions of enrollment, would encourage these students to return to their countries of origin. Such trained manpower would be an asset to the socio-economic development of less developed countries.

The principal argument against "inter-provincial" students is that Alberta students are discriminated against in other provinces by subtle and concealed admission quotas, and that there are fewer Albertans studying in other provinces than there are students from these provinces in Alberta. The proposed restrictions, limitations, and differentiation in tuition fees is speculative, being based on imaginary situations, with no adequate systematic analysis of the available data. Indeed, at the time of writing, there is no published document which provides more than simplistic statements and resolutions. One is inclined to interpret the sentiments expressed in these statements as provincial chauvinism alien to the philosophy of Confederation, and the democratization and universality of education.

Growth in Enrollment and Per Capita Cost

To examine the dimensions of the financial situation and its relevance to the “brain drain” issue, let us review the growth of the university system during the period from the 1958-59 to 1969-70. During this decade, full-time students increased 4.4 times, from 6,021 to 26,599, while part-time students increased 3.3 times, from 4,128 to 13,706. (See Table 1.)

The most remarkable feature of university growth in Alberta is the accelerated increase in the student population during the last five years. In the academic year 1969-70, the total number of full-time students was 15.7 percent greater than in the previous year. Each of the three universities experienced rapid growth, especially The University of Calgary, which enrolled one-third more than in the previous year. However, in the following academic year, the total full-time increase for all three universities was only 2,414 students. This represents a growth of only 9.1 percent over the previous year.

TABLE 1
OPERATIONAL DATA ON THE ALBERTA UNIVERSITY SYSTEM
1959 TO 1970

Academic Year	Full-Time Students	Part-Time Students	Sources of Operating Income (\$000)				Net Operating Expenditure Per Full-Time Student
			Fees	Provincial Grant	Federal Grant	Other Revenues ²	
1959-60	6,021	4,128	1,772	3,947	1,818	18	1,275
1960-61	7,150	4,598	2,049	6,000	1,876	22	1,375
1961-62	8,251	5,808	2,796	8,000	1,947	25	1,535
1962-63	9,149	6,165	3,082	9,542	2,682	35	1,650
1963-64	10,293	7,134	4,016	11,053	2,716	50	1,742
1964-65	11,921	8,350	4,816	15,260	2,750	50	1,867
1965-66	13,542	8,612	5,613	18,644	2,748	244	2,099
1966-67	15,597	9,647	6,394	25,275	6,769	379	2,434
1967-68	18,645	9,893	7,353	43,019	182	1,029	2,759
1968-69	22,976	11,868	11,387	55,859	203	1,631	2,800
1969-70	26,599	13,706	13,248	66,339	144	2,188	3,098
Increase 1958-59 to 1969-70 (times)	4.4	3.3	7.5	16.8	—	—	2.4

¹ Beginning in 1967-68, the Federal Government stopped its direct payments to the Universities (except for small amounts for Vocational Education and Social Welfare) and reimbursed the province for 50 percent of the cost of approved expenditures for post-secondary education.

² Beginning in 1965-66 interest was shown as an income item. Prior to that, it had been netted out of the administrative department expense, i.e., the interest earned was used to reduce expenditures rather than as income. This change in accounting explains the jump in other income between 1964-65 and 1965-66. The interest earned figures, in thousands of dollars, for 1958-59 through 1964-65 were: 1959-59, 2; 1959-60, 11; 1960-61, 11; 1961-62, 27; 1963-64, 87; and 1964-65, 158.

Source: *Annual Report of the Alberta Universities Commission, 1969-70*, page 16.

According to preliminary figures for the 1971-72 academic year, it is estimated that there was no increase in student enrolment in the Alberta university system.

On the expenditure side, provincial grants to the university system increased by 16.8 times—from \$3.9 million to \$66.3 million between 1959-60 and 1969-70. Fees from students, on the other hand, increased 7.5 times during this eleven-year period. However, during this period, the net per capita operating expenditure per full-time student, which is often used as an index to indicate escalating costs, increased by 2.4 times—from \$1,275 in 1959-60 to \$3,098 in 1969-70. However, taking account of inflation, the real per capita operating expenditure, in terms of the 1959 dollar, would appreciably reduce the increase.

It is necessary to point out that the federal government makes a tangible contribution towards post-secondary education. As a result of the recent 50 percent formula for defraying post-secondary education costs from federal resources, Alberta received \$16 million in 1967-68; this was increased to \$34 million in 1968-69. The largest proportion of this grant is channelled to the university and college system.

Origin of Canadian Students in Alberta Universities

Of much concern to policy-makers and administrators is the growth in absolute numbers of non-Alberta students. It is evident that there is an influx of out-of-province students to Alberta universities. However, the percentage of non-resident students in relation to total enrolment has not increased, but has actually decreased. Furthermore, little attention has been given to the large numbers of Alberta students enrolled in higher education programs outside of Alberta.

Students in Alberta universities from other parts of Canada increased by 70 percent, from 1,023 in 1967-68 to 1,776 in 1970-71. Approximately three-quarters of these students are from Western Canada. In 1970-71, the largest group (33.1 percent) were from Saskatchewan, followed by 23 percent from British Columbia, 18.8 percent from Ontario, and 6.4 percent from Manitoba (see Table 2). However, this absolute increase changed only marginally the proportion of students from other provinces studying in Alberta. In 1970-71, 6.1 percent of the entire full-time student population on the basis of home address were from other provinces.

Compared to other provinces, Alberta (with 6.1%) does not rank very highly in the proportion of out-of-province students enrolled in university education. In 1969-70, Manitoba and Ontario had 8.7 and 8.6 percent respectively, while Nova Scotia and New Brunswick had 25 percent of out-of-province students (there is a special co-operative arrangement among the Atlantic Provinces). The largest inflow of students to Alberta is from Saskatchewan, followed by British Columbia and Ontario.

Alberta Students in Other Provinces

A remarkable feature of the inter-provincial flow of students is the increasing number of Albertans going to other provinces. In 1969-70, there were 1,818 Albertans studying elsewhere in Canada. This represents increase of 15 percent over the previous year. The largest flow of students

from Alberta is to British Columbia and Ontario. Each of these provinces accounts for about one-third of the outflow of Alberta students.

TABLE 2
DISTRIBUTION OF FULL-TIME INTRAMURAL STUDENTS
IN ALBERTA UNIVERSITIES—1967-71

Province	1967-68		1968-69		1969-70		1970-71	
	No.	%	No.	%	No.	%	No.	%
Newfoundland	12	1.2	14	1.1	11	0.7	17	1.0
Nova Scotia	20	2.0	34	2.9	52	3.4	56	3.2
Prince Edward Island	9	0.9	5	0.4	11	0.7	18	1.0
New Brunswick	10	1.0	12	1.0	16	1.0	25	1.4
Quebec	51	5.0	68	5.6	86	5.6	123	6.9
Ontario	163	15.9	224	18.4	280	18.3	334	18.8
Manitoba	69	6.7	86	7.1	113	7.4	114	6.4
Saskatchewan	359	35.1	419	34.4	532	34.3	593	33.1
British Columbia	264	25.8	298	24.4	361	23.6	409	23.0
Yukon and N.W.T.	56	5.5	58	4.8	61	4.0	87	4.9
TOTAL OTHER PROVINCES	1,023	100.0	1,219	100.0	1,527	100.0	1,776	100.0
Alberta	16,129	—	19,688	—	22,582	—	25,996	—
Total students at Alberta universities	18,645		22,976		26,637		28,991	
Percentage of students from other provinces		5.5		5.3		5.7		6.1

Source: Annual reports of The Universities of Alberta, Calgary and Lethbridge, as submitted to the Alberta Universities Commission.

Since it could be argued that the figures for one year conceal trends, the following table is presented to indicate the net flow of students to and from Alberta over the last decade. According to Table 3, in 1960-61 there were 322 more Alberta students in higher education in other provinces than students from other provinces in Alberta. In 1967-68, this figure increased to 712: it declined after that year. During the decade, the total gain to Alberta was 4,021 students. All provinces except Saskatchewan and the Atlantic Provinces educate more Alberta students than Alberta educates their students: this represent a net loss to their resources. What, then, is the rationale in restricting the enrolment of inter-provincial students in Alberta universities when other provinces are indirectly financing the education of a relatively large proportion of Alberta students?

Thus, the concept of imposing quotas on inter-provincial students cannot be justified on economic grounds, except, perhaps, in the case of students from Saskatchewan. Nor is there any tangible justification for devising differential tuition fees to approximate the real cost of education in the province. After consulting all available sources of information for differential tuition fees at universities in Canada, it has been found that only the University of Windsor in Ontario has such a scale. The differential amounts to only \$100 and applies only to graduate students from outside the Province. If Alberta were to pursue a differential tuition fee policy for Canadians, it is possible that other provinces would follow. The outcome of this development would be a financial loss to Alberta.

TABLE 3
NET FLOW OF INTERPROVINCIAL UNIVERSITY ENROLMENTS
FOR ALBERTA 1960-61 TO 1969-70 BY PROVINCES

	British Columbia	Saskat- chewan	Manitoba	Quebec	Ontario	Atlantic Provinces	TOTAL
1960-61	-162	+156	- 58	-226	- 44	+ 12	322
1961-62	-196	+111	- 83	-233	- 87	+ 4	-484
1962-63	-176	+153	-122	-220	- 96	+ 8	-443
1963-64	-173	+200	-100	-260	-103	+ 18	-418
1964-65	-152	+252	- 81	-277	- 89	+ 6	-341
1965-66	-297	+191	-110	-285	- 92	+ 14	-597
1966-67	-287	+250	- 84	-242	-109	+ 19	-453
1967-68	-475	+203	- 77	-271	-102	+ 10	-712
1968-69	-313	+328	- 35	-198	- 65	+ 23	-260
1969-70	-159	+433	- 36	-284	- 12	+ 49	- 9
TOTAL NET	-2,390	+2,227	-776	-2,496	-799	+163	-4,021

Note: A minus sign indicates that fewer students from that province were enrolled at Alberta universities than students from Alberta were enrolled in the universities of that province: a plus sign implies the converse.

Source: Dominion Bureau of Statistics 81-204 (*Survey of Higher Education*, Part 1, 1968-69), Table 8.

Foreign-born Students in Alberta Universities

Let us examine the situation in relation to foreign students. The statistics on these students and on Canadians in foreign countries are inadequate and subject to a large range of error. Canada for many years has been providing higher education for students from many countries. Recently, the base has been broadened to include many students from less developed countries. Altogether, in 1940-41, 5.7 percent of the total enrolment came from outside Canada. The proportion increased only to 6.5 percent in 1968-69, although the actual number increased from 2,056 to 17,423 during this period. However, full-time enrolment in universities in Canada increased even faster, from 36,919 to 270,093, during the 28 years (Dominion Bureau of Statistics).

Among the major universities in Canada, Alberta has the smallest percentage enrolment of foreign students. The universities of McGill and

Toronto registered 15.6 percent and 10.2 percent in 1967-68, respectively, compared to 4.4 percent at The University of Alberta.

The size of the total foreign student population in Alberta universities has been increasing continuously, although the proportion of foreign students in the total student body increased only marginally. In 1967-68, the proportion of full-time students from foreign countries represented 4.2 percent of all students. In 1968-69, this proportion increased to 6.5 percent, but declined in the next academic year to 4.7 percent. The total number of full-time intramural students by country of citizenship in 1970-71 was 3,433 persons. Of these, the largest proportion—20.3 percent—were from the United Kingdom, followed by the United States—19.2 percent, Hong Kong—12.3 percent, India—5.9 percent and, the Caribbean—4.9 percent.

The majority of students are from Anglo-Saxon countries, while only a small proportion are from less developed countries. Taking this situation into consideration, it would seem inappropriate to set quotas for countries, the majority of which have fewer than five students in Alberta. The rising number of students from Hong Kong is of special interest, considering the population of that country. In 1967-68, there were 92 students from Hong Kong, whereas in 1970-71 the number had increased almost by five times to 422, an increase of 84 percent over the previous year. It should be pointed out that students from other areas increased appreciably. For example, from the United States and Thailand, the increase was of the order of 26 percent and 48 percent respectively. On the other hand, students from large, colored Commonwealth countries substantially declined by 18 percent. There was only a marginal increase for students from the United Kingdom.

Limitations of a Quota System

Even if a policy of student quotas were to be implemented, there is no evidence that the total intake of foreign students can be significantly reduced. The main factor is the impact of the immigration laws of Canada, over which provincial governments have no jurisdiction. In addition, the flow of foreign students is dependent on Canada's foreign policy in relation to less developed countries. A large proportion of students from colored Commonwealth countries received federal government scholarships to pursue higher education in Canada as part of its foreign aid program. For example, as a result of a change in policy, students from India declined from 220 in 1969-70 to 203 in the academic year 1970-71.

Foreign students in Alberta universities are classified into those holding student visas, and those who are "landed immigrants". The latter status provides the student with many rights and privileges, including the right to work, to be entitled to a grant after one year's residence on the same terms as other Canadian students, and the right to education. Can a foreign student, immediately after arrival in Alberta or after one year of living in this country, be denied university admittance. Under the existing entrance requirements refusal can only be on the ground of academic inadequacy.

The statistical evidence indicates that 37.4 percent of all foreign students hold student visas. However, it must be recognized that the less highly developed countries have each a high proportion of such students. For example, in 1969-70, all the students from Thailand were on student visas, while the proportion from Ghana was 94.1 percent, from Malaysia 92.7 percent, from Hong Kong 79.9 percent, from Pakistan 70.0 percent and from India 60.9 percent.

The reverse is true for the Anglo-Saxon developed nations. From the United States and Great Britain, the proportions are 32.2 percent and 12.8 percent, respectively. These two countries provide about 45 percent of the total of students in both categories. Very few students would be denied university entrance if considered from the standpoint of having landed immigrant status. One does not know how long after their arrival in Canada these and other European landed immigrants have taken to enter the university system. It is probable that many of these students came to Alberta planning on permanent residence, and that they have been wage-earners from one to five years before they became students.

Inflow of Professional and Skilled Manpower

Policies directed towards differentials relating to fees, quotas, and regional distribution in the enrolment of foreign and inter-provincial students at Alberta universities should take into consideration the "brain drain" flow to Alberta. It is argued that the absolute total subsidy by the Province of Alberta of operating costs for foreign students increased from \$1.5 million in 1968-69 to \$1.6 million in 1969-70. This is calculated as half of the per student cost of \$1,170 and \$1,298 in 1968-69 and 1969-70 respectively. The federal government pays half of the operating costs of university education. On the same basis the total cost for "inter-provincial" students was \$1.6 million and \$2 million in 1968-69 and 1969-70 respectively. While foreign students and those from other parts of Canada have received a subsidy on the average of about \$4,000 for a degree from Alberta universities, the Province of Alberta has been the beneficiary of the influx of thousands of professionals each year from international sources as well as from other provinces. This flow of highly qualified human resources has ensured, and accelerated, the social and economic development of this province, without any direct contribution by Alberta taxpayers towards their education.

The magnitude of the brain drain to this province is enormous (Johnson, 1965). For example, in 1969, immigrants with professional qualifications whose intended destination was Alberta totalled 2,286 persons. Of these, 83 were physicians and surgeons, nearly the same number of graduates that year from the Faculty of Medicine at the University of Alberta (Annual Report, 1970). In many previous years, immigrant physicians and surgeons exceeded the output from The University of Alberta.

The contribution of this element of the brain drain is even more significant when one considers that of 240 new doctors registered in Alberta in 1970, only 64 (25 percent) were trained in Alberta. Of the remainder, the bulk was from Great Britain, and 40 persons from other Canadian schools. Altogether, only one-third of the 2,068 practicing physicians were Albertans.

The proportion of non-Albertan teachers in the province is also remarkable. In 1969, of 18,011 teachers, 67.1 percent received their earliest certification from Alberta, while 21.9 percent were from other provinces, including 13.9 percent from Saskatchewan.

The average cost of the university education of a medical general practitioner is about \$45,000; in 1970, non-Albertan doctors, in terms of direct university costs, represented a total of approximately \$8 million in human capital inflow, of which \$6.1 million was from foreign countries. This sum can be compared to the estimate of \$1.6 million which the Province of Alberta spent in 1969-70 to subsidize the education of all foreign students (by home address) in universities. Moreover, when this subsidy is considered against the total human capital inflow of the 2,286 professionals in Alberta in 1969, it represents only an insignificant indirect financial contribution to the students' countries of origin.

Summary

There is little economic justification for placing quotas on students from other countries and provinces without further research on the universal and national contexts in which education takes place, and the needs of Alberta and other provinces and countries. During the last decade other provinces and countries have provided higher education for more Albertan students than this province has enrolled. There are also considerable numbers of Alberta students receiving their education in other provinces and countries.

Before the situation in Alberta can be properly analyzed, more satisfactory methods are needed to establish the exact number of students, and the differences in their status, from foreign countries and from other provinces in Alberta.

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Special Review

by John McLeish

Oscar Krisen Buros (ed). *The Seventh Mental Measurements Yearbook*, The Gryphon Press, Highland Park, N.J. 1972, 2 vols. pp. xl + 1986. \$55.

What can one say about the Seventh Mental Measurements Yearbook adequately to convey the quality of the work? For a start, it appears to be twice as large as we are accustomed to see Buros. On inspection, it has all the qualities of the earlier yearbooks. Apparently it must be twice as good. Clearly, this is impossible! But it is still a quite remarkable achievement. Indeed it is extraordinary, in the class of a miracle that is always with us, that this two-"man" team, Oscar and Luella, with an associated small group of dedicated workers, have now spent over 34 years producing the "Yearbooks" as the most indispensable reference book in their field. The present volume is the crowning-piece of their achievement: it now seems very doubtful that another yearbook will appear under their imprint.

These two volumes are a fitting continuation of the work begun three or more decades ago. More than 500 tests are reviewed by nearly 800 independent experts. These provide essential information about validity, reliability, norms and sources of tests as well as informed and frank comment about them. The new edition of the Yearbook, the first since 1965, concentrates on *new* tests, but several reviews of older, standard tests are up-dated. The established tradition of republishing reviews of books on psychometrics from the professional journals is continued.

The seven Yearbooks together, all of which are in print, provide the most comprehensive coverage of this area that one could possibly ask for. It is very helpful that the same format, the same layout, the same print, is used in this as in the earlier volumes. The valuable introduction provides a detailed breakdown of the volume itself which (fortunately) excuses the reviewer from making any attempt at a detailed analysis of the contents of this monumental work. It is indeed encyclopedic in its range. The maintenance of the critical and independent standpoint of the enterprise is shown by the editor's rather casual remark (which however is clearly a considered judgment with which many of us would agree) that "at least half the tests currently on the market should never have been produced". That the proportion is not considerably higher than half is surely to be placed to the credit of the present series and their collaborating reviewers.

The reviews of books in the field of measurement, which take up roughly a quarter of the space available, maintain the established tradition of frank, disinterested comment, presenting a number of independent standpoints by leading experts. Unlike the test reviews, which are specially commissioned for the Yearbook, the book reviews are republished from the academic journals. It is interesting in reading the reviews of the previous Yearbook, included (as usual) in the current volume, to discover that all

the favourable things that one wishes to say about the present revision have already been said about its predecessor—"unique", "monumental", "indispensable", "unbelievable", "needing only a few Gustave Doré prints to heighten the illusion of a 'Bible'" etc. The niggling complaints which are generated in the casual user who fails to appreciate the nature of the work, have all been voiced before too—price, weight, an irritating and frustrating method of pagination and indexing, discursive and discordant opinions etc., etc. For those of us who use tests continually however, and who really want to know about them, it must be said that the new Seventh Yearbook has an exceptional value and will be blessed daily by students, librarians and research workers. It is beautifully bound in a sumptuous style, is printed in large, readable type, it contains exactly the kind of basic information about new and revised tests we need and it contains a fair sampling of the opinions of those leading experts who have actually used the tests they are reviewing. In a word, it is exactly the book we have been waiting for since 1965.

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